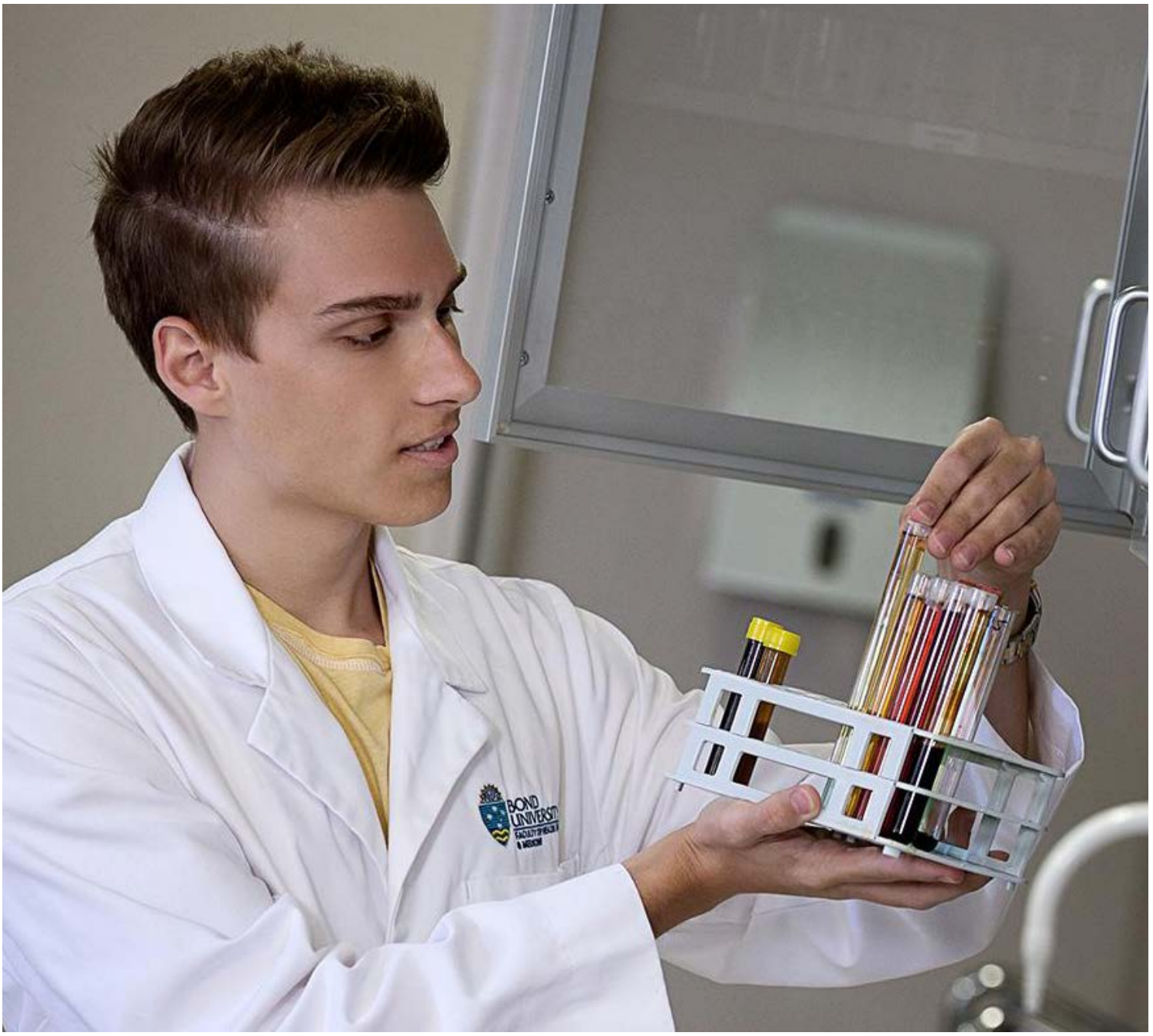
In Silico Identification and in Vitro Activity of Natural Products as ADP-ribosyl transferase member 8 (ARTD8) Inhibitors

Kam, Caleb; Tauber, Amanda L; Schweiker, Stephanie S; Levonis, Stephan M

BOND UNIVERSITY
FACULTY OF HEALTH SCIENCES & MEDICINE

2020 MEDICAL AND POSTGRADUATE STUDENTS RESEARCH CONFERENCE

Fostering healthcare innovations & resilience



Never let
a good crisis
go to waste.

Sir Winston Churchill

PROGRAM

0900 - 0915 **Introduction** – A/Prof Cindy Jones *(MD Academic Coordinator, Faculty of Health Sciences and Medicine, Bond University)*

Welcome – **Prof Nick Zwar** *(Executive Dean, Faculty of Health Sciences and Medicine, Bond University)*

0915 - 1000 **Keynote Presentation**

Prof Karen Reynolds *(Director of the Medical Device Research Institute, Flinders University)*

1000 - 1100 **Panel Discussion** – A/Prof Kevin Ashton *(Facilitator, Associate Dean of Research, Faculty of Health Sciences and Medicine, Bond University)*

Prof Peter Doherty *(Laureate Professor, Microbiology & Immunology, The University of Melbourne)*
Prof Paul Glasziou *(Director, Institute of Evidence-Based Healthcare, Bond University)*
Prof Sharon Mickan *(Professor, Healthcare Innovation, Bond University)*
Dr Jason Limnios *(Postdoctoral Research Fellow, Clem Jones Centre for Regenerative Medicine, Bond University)*

1100 - 1130 *Morning Break*

1130 – 1300 **CONCURRENT SESSION 1**

Stream 1: Emergency Medicine/Internal Medicine/ General Practice	**Stream 2: Immunology/Radiology/ Surgery/ Simulation**	**Stream 3: Medical Ethics/ Mental Health**	**Stream 4: Pharmacology/ Oncology/BioMed**	**Stream 5: Global Health & Planetary Health A**	**Stream 6: Global Health & Planetary Health B**	**Stream 7: Global Health & Planetary Health C**
Chair: Prof Mark Morgan **Co-Chair:** Prof Jane Smith	**Chair:** Prof Victoria Brazil **Co-Chair:** A/Prof Athanasios Raikos	**Chair:** A/Prof Jo Bishop **Co-Chair:** A/Prof Richard Matthews	**Chair:** Dr David Pache **Co-Chair:** Dr Treasure McGuire	**Chair:** Prof Peter Jones **Co-Chair:** Dr Clinton Schultz	**Chair:** Prof Janie Smith **Co-Chair:** Dr Neelam Maheshwari	**Chair:** Prof Michelle McLean **Co-Chair:** Dr Tracy Neilson

1300 - 1330 *Mid-Day Break*

1330 - 1500 **CONCURRENT SESSION 2**

Stream 8: Medical Education	**Steam 9: Paediatrics/ Obstetrics/Geriatrics**	**Stream 10: Physiotherapy/ Dietetics/ Human Movement**	**Stream 11: Global Health & Planetary Health D**	**Stream 12: Global Health & Planetary Health E**	**Stream 13: Global Health & Planetary Health F**
Chair: A/Prof Carmel Tepper **Co-Chair:** Dr Amy Bannatyne	**Chair:** A/Prof David Waynforth **Co-Chair:** Dr Patricia Green	**Chair:** A/Prof Vernon Coffey **Co-Chair:** A/Prof Greg Cox	**Chair:** A/Prof Richard Matthews **Co-Chair:** Prof Janie Smith	**Chair:** Dr Tracy Neilson **Co-Chair:** Dr Clinton Schultz	**Chair:** Prof Peter Jones **Co-Chair:** Dr Neelam Maheshwari

1500 - 1515 *Afternoon Break*

1515 - 1530 **Awards & Closing of Conference – Prof Kirsty Forrest**

CONTENTS

MESSAGE FROM THE DEAN

Heading into 2020, the start of a new decade, in no way did I anticipate how (challenging) 2020 would turn out. The Coronavirus (COVID-19) pandemic has affected every one of us, our family, friends and colleagues here and overseas, on a personal and/or professional level.

We experienced and continue to experience many changes in our *'normal'* way of life (e.g. border closures, lockdown measures, home schooling, working from home, social distancing, use of masks as well as heightened safety and hygiene measures etc.) in a bid to curb the pandemic.

This has had a large impact on our medical program. Not only did we all adapt rapidly to transit from on-campus education to remote delivery of the curriculum and assessments for the phase 1 students in 202, we had to manage the significant disruptions to clinical placements for students especially you, our graduating Year 5 MD students.

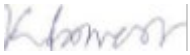
With effort and hard work, you, the students, our professional and academic staff have all risen to the challenge. As you will know, the *COVID E-lective* was developed*, the Learning Coaches* program was introduced and, for the first time, we are holding our annual HSM Medical and Postgraduate Students Research Conference *virtually*! None of this would have happened without *"blood, toil, tears and sweat"* as Winston Churchill once famously said. Is there room for improvement? No doubt, but WE GOT THERE!

Looking through the abstracts, despite the unfortunate halt in some *Capstones*, I am excited to see the range of projects within and across the research and professional streams that span the basic sciences, clinical trials, education, individual and population health. I would like to acknowledge your efforts in completing your MD Project during this challenging time where all of you play an important role in fostering healthcare innovation and resilience *(theme of the virtual conference)*! At no time has this been as important as now with increased and innovate research in epidemiology, public health, virus transmission and vaccine development.

You will no doubt have realised that these projects are a team effort! Success through working well in teams applies to all aspects of health care. Throughout your MD Project, you will have worked with supervisors, fellow students, patients, and faculty staff who have all formed part of your project 'team'. Remember to thank them and share the outcomes of your MD Project with them – they will appreciate that.

Congratulations on completing your MD Project and presenting your work today. This is the start of a career-long engagement with research, either as a clinician or, for some of you, on the path to further success in medical research. Do not be overwhelmed by the enormity of what lies ahead. Instead, remember that you can make a difference, you *will* make a difference.

Professor Kirsty Forrest



MBChB, BSc Hons, FRCA, MMEd, FAcadMEd, FANZCA Dean of Medicine, Faculty of Health Sciences and Medicine Bond University

Zora Neale Hurston: Research is formalized curiosity. It is poking and prying with a purpose.

MESSAGE FROM THE ASSOCIATE DEAN OF RESEARCH

In light of the COVID-19 pandemic we have shifted this year's postgraduate research conference to a virtual format. This has allowed us to run our largest and broadest event yet. Covering almost every corner of research done within the Faculty. We have also been fortunate to engage with a star-studded list of special guests for our keynote and panel discussion. In April, during early planning we thought this change in format was highly innovative, so quickly this has become the new normal. The translation of innovation can be rapid, if driven by necessity.

Our 2020 theme focuses on "*Fostering Healthcare Innovations and Resilience",* a tagline that was actually chosen prior to the pandemic. The original aim being to highlight the importance of developing these two skill sets in health and medical research. However, in these 'strange days' it has taken on a new, unintended meaning. Innovation and resilience now becoming exceptionally important in everyday life.

The immense public spotlight currently on health and medical research is also a new, and never seen before phenomenon. From our front-line healthcare workers, to the diagnostic laboratories, vaccine researchers, clinical trials, epidemiologists, the list is long. On the internet and through social media we are seeing scientific and medical research unfold in real time.

All throughout this disruption your own research likely evolved or had to pivot in response to these unpredictable events. However, the research path is barely straight or level at the best of times, where resilience is vital. And this is the primary purpose of this conference, to communicate, discuss and celebrate your amazing research achievements. Congratulations on the progress you have made in your research projects. I look forward to learning more about your projects on Zoom over the course of the day – Sorry, I was on mute!

Assoc/Prof Kevin Ashton

Associate Dean, Research
Faculty of Health Sciences and Medicine
Bond University

CONFERENCE ORGANISING COMMITTEE

Associate Professor Cindy Jones – Chair, Convenor

Associate Professor Kevin Aston – Co-Chair, Co-Convenor

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Ms Christie Short – HDR Representative

Mr Kavinda Jinendradasa (5th Year Medical Student Representative)

Ms Honor Mijatovic (5th Year Medical Student Representative)

We would like to acknowledge and thank all Supervisors and Bond Academic Staff who voluntarily supervised these projects. Without your support and guidance, these projects would not have come to fruition.

We also acknowledge and thank our academic and professional staff who have greatly assisted the organisation of this conference. Thank you all.

ABSTRACTS

STREAM 1: EMERGENCY MEDICINE/INTERNAL MEDICINE/GENERAL PRACTICE

PR1: A901 – Narrative review: The impact of screening women for intimate partner violence in the emergency department on detection rates.

Anand, Anagha, 5th year medical student, Bond University, Health Sciences and Medicine
Sweeny, Amy, Research Development Manager, Gold Coast University Hospital

Introduction

Domestic and family violence (DFV) or intimate partner violence (IPV) is a highly prevalent issue in Australia.[1] This narrative review explores whether IPV screening increases detection rates. It also looks at which screening methods are most useful at detecting IPV.

Methods

The primary search for the review was conducted on the Medline (Ovid) database. A secondary search was conducted by searching reference lists of the identified systematic reviews. Citations of identified articles were then searched on Google Scholar.

Results

Five studies compared screening for DFV/IPV with usual care and their impact on identification rates. Three of these studies revealed an increase in IPV identification, one showed increased detection in urban and not in suburban settings, and one showed no difference. Four other studies looked at assessing the validity of different screening tools. These results showed a mixed range of values for the sensitivities, specificities and predictive values of the screening tools. One of the studies compared IPV detection rates for two methods of testing (face to face vs tape-recorded questionnaire).

Conclusion

This review revealed that routine screening for IPV in ED can help increase identification. The gold standard comparison tool varied between the included studies making it difficult to identify the most useful tool. The STaT tool with scores of >1 and >2 had the highest sensitivities in this study. This tool also had one of the highest IPV detection rates. Further research is needed determine the best screening tool in the ED setting and to confirm our findings.

References

1. Intimate partner violence. World Health Organisation. https://apps.who.int/violence-info/intimate-partner-violence/. Updated 2017. Accessed May 13, 2020.

PR2: A912 – Patient empowerment for ultrasound-guided peripheral intravenous cannula insertion in the emergency department: A multisite cross-sectional time-series study.

Aggarwal, Nisha, 5th year medical student, Bond University, Health Sciences and Medicine
Holmes, Travis, 5th year medical student, Bond University, Health Sciences and Medicine
Libbis, Eng, Clinician, Gold Coast University Hospital
Watkins, Stuart, Emergency Physician, Gold Coast University Hospital
Sweeny, Amy, Research Development Manager, Gold Coast University Hospital

Background

Peripheral intravenous cannula insertions (PIVC), are a common procedure in the emergency department and can be quite difficult in many patients. Ultrasound (US) is an important adjunct to aid in supporting this process and early success of insertion. The aim of this study was to explore the role of empowerment of patients to advocate for early US intervention, particularly in those with a prior history of difficult insertion. The primary outcome was to look at the proportion of patients with a PIVC inserted using ultrasound.

Methods

This was a prospective observational time series study using a Plan-Do-Study-Act (PDSA) rapid quality improvement framework. Three interventions were utilised to assess the impact of patient empowerment and education on advocating for early US use. Data was compared to pre-intervention baseline period and a linear regression trend analysis was performed.

Results

A total of 2133 PIVC insertions were recorded across two emergency departments over 42 times points. The highest proportion of PIVCs inserted under US-guidance at GCUH occurred during periods of non-intervention. Intervention 1 presents a statistically significant upward trend compared to baseline. Interventions 2 and 3 were

not statistically significant and showed no upward trend in US-guided PIVC insertions from baseline.

Conclusion

This is the first prospective observational study that aims to empower the patient in US-guided PIVC insertion. While there were significant results, no interventions were found to change clinical practice. This study populates a profound paucity in the literature and serves as a key pilot study for future research.

PR3: A922 – Characteristics of trials reporting adverse events in RCT's of antibiotics: A secondary analysis of a convenience sample of systematic reviews.

Nair, Ramil, 5th year medical student, Bond University, Health Sciences and Medicine

Yan, Kylie, 5th year medical student, Bond University, Health Sciences and Medicine

Bakhit, Mina, Institute for Evidence Based Healthcare, Bond University

Scott, Anna Mae, Institute for Evidence Based Healthcare, Bond University

Baker, Jenalle, Faculty of Law, Bond University

Del Mar, Chris, Institute for Evidence Based Healthcare, Bond University

Introduction

The benefits of antibiotics have been clearly documented in randomized controlled trials (RCTs). However, adverse effects are continuously underreported. Often, RCTs do not report or measure these risks due to time constraints, complexity and not meeting the study objectives.[1] The aim of this paper is to explore the characteristics of trials reporting adverse events of antibiotics, this includes source of funding, conflicts of interests and reporting of antibiotic resistance.

Methods

Secondary analysis of 434 RCTs included in a convenience sample of three systematic reviews. Researchers independently extracted data relating to adverse events, COI and funding from individual studies. The data was extracted and entered into a pre-piloted data extraction form and analysed to explore the reporting habits by the trials.

Results

432 individual studies were included in this review. Of this, 334 studies reported on adverse events and 98 studies did not. 27% of studies that reported adverse events provided conflict of interest statements, 69% provided source of funding statements, but only 34% provided statements regarding the role of those funding bodies.

Conclusion

Findings show gaps in the current literature. There was an overall lack of reporting in all three domains of adverse events, COI and study funding across the three classes of antibiotics. Many of the studies did not provide these disclosures or reporting of adverse events. This can have concerning effects in clinical practice where drug safety versus harm is imperative for clinicians and patients when making informed decisions.

References

1. Vandenbroucke JP. When are observational studies as credible as randomised trials?. The Lancet. 2004 May 22;363(9422):1728-31.doi:10.1016/S0140-6736(04)16261-2

PR4: A928 – Implications of the number of blood pressure readings on hypertension classification according to Australian and American guidelines: A cross-sectional population-based study.

Doan, Lucy, 5th year medical student, Bond University, Health Sciences and Medicine

Moktar, Adam, 5th year medical student, Bond University, Health Sciences and Medicine

Albarquoni, Loai, Postdoctoral Research Fellow, Bond University, Health Sciences and Medicine

Background

The National Heart Foundation Australia (NHFA) 2016 blood pressure (BP) guidelines recommend taking three BP measurements, discarding the first and averaging the last two, on two or more separate occasions. However, in clinical practice the busy clinician might opt to rely only on one BP measurement for efficiency.

Objective

To compare the reclassification of hypertension diagnosis based on first blood pressure reading and the recommended average of the second and third blood pressure readings. Redistribution was categorised according to the NHFA 2016 guideline and the American College of Cardiology and American Heart Association (ACC/AHA) 2019 guideline.

Methods

Study design: Cross-sectional study.

Study population: 8,078 adults, 25 years of age and older from the 1999-2000 Australian Diabetes, Obesity and Lifestyle (AusDiab) study.

Definitions: According to the NHFA guideline, hypertension is diagnosed when systolic BP (SBP) is $\geq$ 140mmHg and/or diastolic BP (DBP) is $\geq$ 90mmHg.

According to the ACC/AHA hypertension guideline, hypertension is diagnosed when SBP $\geq$ 130mmHg or DBP is $\geq$ 80mmHg.

Results

According to the NHFA 2016 guideline there was an overall increase in hypertension reclassification with 2.16% recategorized from normotensive to a hypertensive subcategory. In comparison, the ACC/AHA group has 4.51% additional individuals classified as hypertensive.

Conclusions

Overall there was an increase in the redistribution of hypertensive individuals when diagnosed with a single BP reading. As this can lead to overdiagnosis and associated implications, it is recommended that the current gold standard is continued.

PB1: A907 – Geographic variation in the statin randomised controlled trials for primary and secondary prevention: A literature review.

Trivedi, Yug, 5th year medical student, Bond University, Health Sciences and Medicine

Adams, Cobi, 5th year medical student, Bond University, Health Sciences and Medicine

Gunasekara, Supun, 5th year medical student, Bond University, Health Sciences and Medicine

Singh, Kuljit, Staff Specialist, Department of Cardiology, Gold Coast University Hospital

McGuire, Treasure, Associate Professor of Pharmacology, Bond University, Health Sciences and Medicine

Background

Globalisation in cardiovascular research has seen the emergence of international multi-centre randomised controlled trials (RCTs) as benchmark for prospective study. However, these trials combine heterogenous populations with varying baseline characteristics, therapy adherence and background standards-of-care. These key differences are thought to be responsible for the geographic variation in treatment effect highlighted in recent trials. Despite the pivotal role of statins in cardiovascular disease (CVD) risk reduction, there is scant evidence regarding geographic variation in statin trial outcomes. Thus, we sought to examine for geographical differences in the statin RCTs for the primary and secondary prevention of CVD.

Methods

We conducted a comprehensive literature review to explore geographic variation in the statin RCTs. To avoid duplication, we updated a search from a recent high-quality systematic review. We then systematically searched MEDLINE, Embase and Cochrane for trials published since the chosen systematic review. We included RCTs comparing statin therapy with placebo or usual care, therapy > 2 years, N>1000 and reported CVD outcomes.

Results

We found twenty RCTs eligible for inclusion. Six were performed across multiple geographic regions including Europe, The Americas, Australasia, Africa and the Middle East. Zero trials reported outcomes/data according to region.

Conclusion

We found minimal evidence regarding statins in lower-income regions despite contributing to >80% of CVD worldwide. Additionally, trials are not reporting regional outcome data. Although the interpretation of geographical variation remains complex, these differences certainly warrant consideration. We suggest journals mandate the reporting of these data to help readers understand the geographic factors affecting treatment outcomes.

PB2: A927 – Implications of the new ACC/AHA hypertension guidelines on the prevalence and treatment of hypertension for the Australian population.

Sunny, Linda, 5th year medical student, Bond University, Health Sciences and Medicine

Robinson, Maclain, 5th year medical student, Bond University, Health Sciences and Medicine

Kaganov, Elizabeth, 5th year medical student, Bond University, Health Sciences and Medicine

Albarquoni, Loai, Postdoctoral Research Fellow, Institute for Evidence-Based

Healthcare, Bond University, Health Sciences and Medicine
Glasziou, Paul, Director, Institute for Evidence-Based Healthcare, Bond University, Health Sciences and Medicine

Objective:
To evaluate the implications of the new 2017 American College of Cardiology and American Heart Association (ACC/AHA- 2017) hypertension guidelines on the prevalence and management of hypertension for the Australian population, by comparing it to the 2016 Australian Heart Foundation (AHF-2016) hypertension guidelines.

Design
Observational assessment using nationally representative data.

Setting
Cross-sectional study using the participants of the Australian Diabetes, Obesity and Lifestyle Study (AusDiab), conducted from 1999-2012, the largest longitudinal Australian study regarding the incidence of diabetes, cardiovascular and kidney diseases.

Participants
Participants of AusDiab, aged 40-79 years, not taking statins or anti-hypertensive medications, not identifying as Aboriginal or Torres Strait Islander, has a baseline LDL-cholesterol <190 mg/dl and has three blood pressure measurements.

Main Outcome measures
Proportion of participants diagnosed with hypertension and recommended for anti-hypertensive treatment.

Results
41.2% (95% CI: 39.7%-42.6%) and 20.9% (95% CI: 19.7%-22.1%) of the participants were diagnosed with hypertension with the ACC/AHA-2017 and AHF-2016 guidelines respectively, corresponding to a 49.3% (95% CI: 50.4%-48.1%) increase in the diagnosis of hypertension with the ACC/AHA-2017 guidelines. Participants diagnosed by ACA/AHA-2017 guidelines were younger with a mean age of 57.6 years (95% CI: 57.1-58.1) and had lower cholesterol (LDL and total) levels. There was a 35.2% increase in the proportion of participants recommended for anti-hypertensive treatment with the ACC/AHA-2017 guidelines (8.9% recommended for treatment) compared to the AHF-2016 guidelines (5.7% recommended for treatment).

Conclusion
Implementation of the ACC/AHA-2017 guidelines will be associated with a significant increase in the prevalence and pharmacological management of hypertension in Australia.

IG1: A901 – The impact of screening for domestic violence in the emergency department: A scoping review.

Rafla, Jonathan, 5th year medical student, Bond University, Health Sciences and Medicine
Sweeny, Amy, Research Development Manager, Gold Coast University Hospital

Introduction
Domestic violence has become a topic of both international and local priority, both as a major public health and human rights issue. For many victims, the ED is the only access to healthcare and social services they may ever encounter, and for many reasons, victims are not being identified nor helped. This scoping review aims to determine the level of data that answers the question as to whether screening for domestic violence in the emergency department makes a difference to victims lives.

Methods
Databases of MEDLINE, CINHAL, PubMed and Google Scholar were searched, and were limited to articles that were published after 1995, quantitative data that were focused on the emergency department, and were in English.

Results
Eight articles were found and were included in this review, with varying outcomes of interest. The results reveal that screening does increase detection rates.

Conclusion
More research is needed to confirm this and to explore the other outcomes, as there is insufficient quantitative data in the literature that answers this life saving question.

References
1. Hunt A, Webber K, Montgomery J, Duong A. Family, domestic and sexual violence in Australia 2018. Australian Institute of Health and Welfare; 2018.
2. Ramsay J, Richardson J, Carter YH, Davidson LL, Feder G. Should health professionals screen

women for domestic violence? Systematic review. BMJ. 2002 Aug 10;325(7359):314.
3. O'Doherty L, Hegarty K, Ramsay J, Davidson LL, Feder G, Taft A. Screening women for intimate partner violence in healthcare settings. Cochrane database of systematic reviews. 2015(7).

IG2: A924 – Anti-emetics in palliative care: A decision making algorithm for palliative care patients with nausea and vomiting.

Neerhut, Thomas, 5th year medical student, Bond University, Health Sciences and Medicine
Pache, David, Adjunct Assistant Professor, Bond University, Faculty of Health Sciences and Medicine.
Green, Patricia, Assistant Professor, Clinical Skills and Translational Simulation, Bond University, Health Science and Medicine

Introduction

Junior doctors are often called upon to manage complex clinical scenarios without immediate supervision from a senior colleague. This is common in the management of nausea and vomiting (N&V) within the palliative care setting. N&V is often straightforward to manage in these patients however it can be challenging.

Project aim

This project was designed to aid junior physicians in recognising the appropriate antiemetic to prescribe to a patient and when advice from a senior colleague must be sought. This was done through developing a decision-making tree (DMT) to guide junior doctors when prescribing for patients with N&V in palliative care.

Methods

The evidence for medications used for N&V presentations in palliative care patients and the presentations significant enough to warrant intervention of a senior medical colleague were both assessed. This led to the development of the DMT as an aid to safe prescribing by junior physicians.

Results

Whilst there is evidence to support the use of certain anti-emetics based upon specific aetiologies, much of the current literature fails to recognise the multifactorial nature of N&V. Furthermore, there is poor agreement regarding standardised outcome measures for assessing the impact of N&V pharmacotherapy.

Discussion

This DMT was designed to help junior doctors navigate the clinical considerations when prescribing for N&V management in the palliative care. Limitations in recognising the red flag symptoms versus manageable clinical symptoms highlights the need for further work in this area to help junior physicians become safe prescribers. The decision-making tool requires evaluation, including ethical consideration prior to clinical application.

OP1: Understanding patients' experiences in interprofessional collaborative practice of chronic conditions in primary care: An Integrative Review.

Davidson, Alexandra R, PhD Candidate, Faculty of Health Sciences and Medicine, Bond University,
Kelly, Jaimon, Postdoctoral Fellow, School of Medicine, Griffith University
Ball, Lauren, NHMRC and Senior Research Fellow, Menzies Health Institute Queensland, Griffith University
Morgan, Mark, Professor, Faculty of Health Sciences and Medicine, Bond University,
Reidlinger, Dianne P, Associate Professor, Faculty of Health Sciences and Medicine, Bond University

Background

Interprofessional collaborative practice (IPCP) is an essential component of high-quality healthcare to effectively address the growing prevalence of chronic disease. IPCP occurs when multiple health workers from diverse backgrounds work together with patients to provide comprehensive care. It is unclear how patients experience and perceive IPCP practice in primary care, including their role in the collaboration, and their perceptions of how IPCP enhances care, safety, quality, and outcomes. This review aimed to provide an understanding of how patients with a chronic disease experience IPCP in the primary care setting.

Methods

An integrative review was conducted to synthesize qualitative and quantitative findings. Medline, Embase, CINAHL and Web of Science were searched using key terms for

"interprofessional collaboration", "primary care" and "patient experience". Inclusion criteria: (i) empirical full-text studies, (ii) conducted in primary care, (iii) outcomes include experiences or perceptions of IPCP by patients with a chronic disease, (iv) reported in any language, (v) adult participants, and (vi) published in any year. Independent screening of search results was performed by two investigators. The Mixed Methods Appraisal Tool was used for quality assessment. Study findings were extracted and analysed thematically using meta-synthesis.

Results

Patient experiences varied depending on condition and primary setting. Key categories of patients' experiences of IPCP: *Organisational structures* – enjoyed of co-location of professionals, *Compared IPCP to 'standard care'* - improved experience, *Patient System* – included health professionals, family/carers, and friends in care, *Participant Influences* – characteristics, meeting needs and expectations, *Team Characteristics* – trustworthy, attentive, supportive, *Relationships* – positive relationship with the team resulted in positive experiences, and *Communication* essential to collaborative practice for patients.

Conclusion

Overall, patients found IPCP provided holistic, comprehensive, and patient-centred care. The findings will guide future primary research studies to further explore patient experiences of IPCP in primary care.

STREAM 2: IMMUNOLOGY/RADIOLOGY/SURGERY/SIMULATION

PR5: A934 – Animal grafting models for IgM antibody production associated with B1a cells in the spleen.

Lim, Jae Sung, 5th year medical student, Bond University, Health Sciences and Medicine
Powell, Katie, Research Laboratory Manager, Bond University, Health Sciences and Medicine
Tourle, Karin, Centre Research Manager, Bond University, Health Sciences and Medicine
Tan, Jonathan, Assistant Professor, Bond University, Health Sciences and Medicine

Introduction

Surgically or congenitally asplenic patients are susceptible to overwhelming postsplenectomy infection (OPSI), thought to be due to the lack of specialised B cells located in the spleen called B1a and B1b cells. These cells provide natural innate and early adaptive antibodies against encapsulated bacteria. We aim to test the regenerative function of various splenic grafts in the context of spleen transplantation in splenectomised mouse models, with a specific focus on early B cell function versus donor graft age.

Methods

Serum from various mouse model treatment groups were collected and tested for antibody levels following the ELISA (enzyme-linked immunosorbent assay) protocol. Experimental groups were analysed under 3 different capture coatings (anti-mouse IgM, Pneumovax 23 [PVX], and phosphorylcholine [PC]) to assess IgM responses corresponding to the respective coatings. Data was collected using FLUOstar Omega plate reader and statistically analysed using Students t-test and two one sided t-test. *P* values <0.05 were considered statistically significant.

Results

Using mouse vaccination models, we have confirmed that an early antigen specific antibody response is raised against Pneumovax. Subsequently, we have also shown that neonatal splenic tissue grafts support significantly greater levels of circulating PVX-specific (B1b cell-mediated) and PC-specific (B1a cell mediated) IgM antibodies post-immunisation compared to adult grafts.

Conclusion

Neonatal grafts are far more efficient in reconstituting the concentration of natural IgM produced by B1a cells. Better clinical outcome in splenic auto transplantation is therefore more likely in younger patients. Future experiments will aim to investigate the mechanism of neonatal spleen tissue regeneration and how adult grafts may replicate its process.

PR6: A934 – Assessing the capacity for regenerated murine spleen tissue to support early IgM antibody response.

Narayanan, Sibi, 5th year medical student, Bond University, Health Sciences and Medicine
Powell, Katie, Research Laboratory Manager, Bond University, Health Sciences and Medicine
Tourle, Karin, Centre Research Manager, Bond University, Health Sciences and Medicine
Tan, Jonathan, Assistant Professor, Bond University, Health Sciences and Medicine

Introduction

The spleen is a solid lymphoid organ in humans that acts primarily as a blood filter and has important roles with regards to blood-borne immunity. Due to its location and rich vascularity, it is one of the primary solid organs damaged as a result of blunt force trauma injuries. Asplenic individuals carry an increased risk of overwhelming post-splenectomy infections (OPSI) that can lead to life-threatening complications such as sepsis. Here, we use animal models to assess the role of spleen grafts in maintaining B1a cells, which are pivotal in the early humoral IgM immune response.

Methods

ELISA (enzyme-linked immunosorbent assay) was used to assess the serum of murine models with different spleen transplantations to determine specific antibody responses following Pneumovax (PVX) vaccination.

Results

Analysis of vaccinated mouse serum samples from splenectomised animals grafted with spleen tissue revealed that only certain IgM and PVX-specific responses were significantly increased over splenectomised only animals. There was a statistically significant difference in delayed and pre-loaded graft models for IgM and PVX-specific antibody responses however, no such result was observed for phosphorylcholine (PC)-specific responses.

Discussion

Delayed and pre-loaded spleen graft tissues in mouse models are capable of mounting antigen-specific immune responses; however, spleen grafts may not support PC-specific antibody production indicative of B1a cell function. While this information could prove critical in asplenic individuals who are at risk of OPSIs, further research into these models is required to elucidate further information regarding antibody responses and developing future treatment options.

PR7: B902 – Learning and teaching: Interpreting a head CT scan (Year 3+).

Wilson, Marianne, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Educating others and passing on learned knowledge is an essential and often overlooked aspect of medicine. It is an area that I thoroughly enjoy and am extremely passionate about, which is what led me to undertaking this Professional Project. This presentation will report details of my engagement with the Student Essential Skills in Medical Education (ESME) course, the valuable knowledge I gained from it, and its impact on my future role as a clinician and educator. I will also discuss the steps taken to complete both the Student ESME course and the development of my own teaching resource. Further, the project outputs will be reviewed and discussed. I will also highlight the main learning outcomes. Finally, I will reflect on how this project has impacted my understanding of education in medicine and my role as a future clinician.

PR8: A914/A915 – Chemotherapy is the most declined breast cancer treatment: Reasons, outcomes and possible interventions.

Harding, Ashley, 5th year medical student, Bond University, Health Sciences and Medicine
Mudiyanselage, Pumuditha, 5th year medical student, Bond University, Health Sciences and Medicine
Liang, Rhea, Breast Surgeon, Robina Hospital, Gold Coast Health
Vuksanovic, Dean, Clinical Psychologist, Cancer and Blood Disorders, Gold Coast Health
Bannatyne, Amy, Bond University, Faculty of Health Sciences and Medicine
Crowe, Bethany, Specialist Cancer Nurse, Cancer and Blood Disorders, Gold Coast Health

Background

Breast cancer is expected to become the most commonly diagnosed cancer in Australia. Education, screening programmes and medical advances improve patient outcomes and survival rates. However, there is also an increase in the number of women who decline conventional treatments. This project aimed to identify what treatment options women chose to decline and explore the underlying reasons and experiences after making this decision. By understanding this and assessing the effect on future medical help-seeking behaviour, it would assist planning future developments and interventions for the Gold Coast Hospital and Health Service (GCHHS) breast service.

Methods

Patients who declined one or more modalities of treatment were identified from breast Multi-Disciplinary Team (MDT) meeting logs and treatment clinics of the Breast Service. Qualitative interviews were conducted over the phone. A retrospective audit was conducted using MDT meeting logs from 2010-2020, exploring the Oncology Analysis system (QOOL) and the Hospital Electronic Medical Records (EMR).

Results

The retrospective audit revealed 99.2% of patients received primary treatment; 83.1% declined adjuvant chemotherapy. The main reasons included minimal survival benefit, side effects outweighing any benefit; as well as choosing alternative adjuvant therapies. Some women pursued "natural therapies," however continued to make use of hospital services. It was rare to see women decline all adjuvant treatments, and not return to hospital for any other services.

Conclusion

Although women were most likely to decline chemotherapy, they continued to make use of hospital services. Qualitative interview data is required to make greater assessment of changes required for GCHHS.

PR9: A932 – Arthroplasty in elite athletes.

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Zotti, Mario, Assistant Professor, Orthopaedic Surgeon, Gold Coast Health

Stirling, Allan, Associate Professor (Clinical Anatomy), Bond University, Health Sciences and Medicine

Waynforth, David, Associate Professor (Behavioural/Social Sciences), Bond University, Health Sciences and Medicine.

Background

Total disc replacement (TDR) is a surgical intervention option for elite athletes, however outcomes of arthroplasty in elite athletes required further investigation. The aim of this study was to evaluate the outcomes of lumbar arthroplasty in elite athletes.

Methods

The study looked at 151 athletes who had undergone Lumbar TDR with a maximum follow-up of 5 years. Outcomes were measured in return to sport and return to work levels.

Results

Return to work level was evaluated for 38 athletes and by end of follow-up period only 3 had decreased on the devised work level scale.

Conclusion

Overall, the study shows good outcomes for lumbar arthroplasty in elite athletes with regards to return to work and return to sport.

PR10: B905 – Simulation-based education.

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The field of Simulation Based Education (SBE) is becoming commonplace in practical education in Emergency Medicine, as well as many other specialties. SBE has shown to be a great utility in the development of the knowledge of health professionals in a less critical environment, as well as enhancing their skills and workplace attitudes, while safeguarding patients from potentially preventable harm.

SBE generally comprises of a briefing, followed by participation in the simulation, and ending with a debrief, which allows for a general discussion about the case and critical evaluation of performance. Depending on the scenario, the simulation component generally involves performing a history and examination on a simulated patient or manikin, then ordering investigations and administering treatments as one would do in a real-life medical setting.

During our seven-week professional development rotation in simulation we attained worthy experience in the fields of Emergency Medicine, ICU, and other specialties, specifically through the lens of SBE. Certain activities of our MD project included active participation and observation of simulations at GCUH and Robina Hospital. Furthermore, participation in Bond Virtual Medicine (BVH) sessions including the assembly of new BVH cases. We also participated in a moulage workshop which involved learning the art of applying mock injuries to simulated patients or manikins for the purpose of the relevant simulation scenarios.

During the rotation we gained a great deal of appreciation for SBE, and the many benefits it brings to the realm of medical education as discussed in our MD project report.

PR11: B905 – A professional development elective in simulation based education.

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Introduction

This report outlines the undertaking of a seven-week elective in Simulation-Based Education (SBE). This project involved several components, with an emphasis on enhancing simulation delivery, developing strategies for effective learning engagement and participating in facilitative roles to broaden experiences in medical education.

Objectives

The objectives for this rotation were varied, including the design of case scenarios to achieve learning outcomes, selection of appropriate simulation modalities and the application of theoretical understanding of concepts like psychological safety and debriefing techniques.

Outcomes

To achieve these outcomes, a number of hours were spent engaged in professional development workshops learning the skills required to deliver simulations effectively, including: scenario design, debriefing and technical skills (e.g. moulage). Attending and participating in simulations facilitated by Gold Coast Health and Bond University, aiding in the facilitation of Bond Virtual Hospital (BVH), weekly Educators Get Educated (EDGE) meetings and writing an appropriate case for 3rd year medical students were also key components of the rotation that facilitated further professional development and interpersonal networking. These activities further enhanced the development of the professional skills required for medical education, inclusive of teamwork, preparation, and adaptability.

Conclusion

Overall, this project was an eye-opening experience as to the complexity of medical education and the skills required, particularly in knowledge and application of a variety of important non-technical skills, including adaptability and preparation.

PB3: B905 – Simulation-based education.

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Introduction

Simulation based education (SBE) is a globally used modern pedagogy in medical education. These sessions enable doctors, nurses, allied health, and medical students to train and polish respective skills in a safe environment, so that it appears as a déjà vu when encountered in a real-life setting.[1] SBE also challenges participants with real-life simulated scenarios emphasizing the importance of closed-loop communication

and teamwork to ensure safe practice and prevent adverse events for the patients.[1]

Methods

The methodology for this project comprised designing the delivery of simulation-based education (scenario and screen based), plus demonstrating skills on effective pre-briefing and debriefing techniques. It also includes writing clinical cases for Bond Virtual Hospital, creation of a moulage project, and how SBE has been used during COVID-19 pandemic.

Discussion

The seven-week elective in simulation enabled us to achieve all the learning objectives of this professional development project, by participating in BVH sessions, delivering simulations, including facilitating pre-briefing and debriefing, a BVH case write-up, and moulage. We believe that SBE experience equipped us with the new and necessary skills and knowledge to design, conduct and facilitate simulations including writing cases and the structures and processes in place to outwork scenarios. It also provided an effective means of retaining clinical knowledge, practising clinical skills in a safe environment, and as a result, improving patient outcomes.

Conclusion

SBE is essential for all prospective medical educators, as it demonstrates the highest level of Kirkpatrick's model of education evaluation, whereby the learning experience of both participants and organisations results in behavioural changes.[2]

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IG3: A931 – Clinical outcomes of revision surgery after multi-level disc arthroplasty.

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Stirling Allan, Associate Professor, Bond University, Health Sciences and Medicine

Waynforth David, Associate Professor, Bond University, Health Sciences and Medicine

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Introduction

Multi-level total disc replacements (TDR) are a safe option in the treatment of multi-level degenerative disc disease however, currently there is no literature evaluating the outcomes following reoperation of multi-level TDRs. The aim of this study was to evaluate the reasons, strategies and clinical outcomes of a multi-level TDR cohort of patients who underwent revision surgery and to compare results to a non-revised cohort.

Methods

Nine patients who required revision surgery after receiving a multi-level TDR were included for this study. Patient reported outcome measures (PROMs) were collected pre-operatively and post-operatively following revision surgery at three, six and twelve months. PROMs included visual analogue scores for back (VAS-B) and leg pain (VAS-L), the Oswestry disability Index (ODI), the Roland-Morris Disability Questionnaire (RMDQ) and patient satisfaction scores.

Results

During a 10-year follow-up, the reoperation rate was 6.87% from a cohort of 131 patients. Revised patients showed absolute improvements in PROMs at 12 months post-revision when compared to pre-operative baseline. Revised patients showed significantly less improvement in their ODI and RMDQ scores at 12 months post-revision when compared to non-revised patients. There was no significant difference between cohorts in VAS-L and VAS-B scores. The most common reason for revision surgery was for adjacent segment motion disease.

Conclusion

Our study shows an acceptable revision rate for multi-level TDRs. Further data is still required on the long-term outcomes of mult-level TCRs, however, these results demonstrate that even when complications requiring revision surgery develop, pain and disability outcomes can still be brought back to levels that are comparable to non-revised patients.

PR12: A926 – The importance of moral distress education in medical school.

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Matthews, Richard, Associate Professor Medical Ethics, Bond University, Health Sciences and Medicine

Moral distress is the psychological situation where one believes something is wrong but is incapable of acting on it. In healthcare, it is usually experienced by people who may have to follow orders they are not comfortable with and feel they do not have the power to question these decisions. Moral distress isn't often spoken about when it relates to doctors and medical students, as most have never heard of the concept, yet it is so prevalent.

Consequences of continued experiences of moral distress can result in burnout, a loss in caring capacity, and even dropping out of medicine all together. The distress is seen as a weakness by some doctors which perpetuates the cycle. Moral distress should be incorporated into medical education to give students and junior doctors the power to recognise and learn from it.

PR13: A926 – Understanding conscientious objection in medicine: An ethical dialogue on medical assistance in dying.

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Background

Euthanasia is currently one of the most contentious topics in medical ethics, with many countries around the world now sanctioning various forms of medical assistance in dying. Conversation about Euthanasia has again and recently come to the forefront in the Australian health care system, with both Victoria and Western Australia legalising forms of medical assistance in dying.

Methods

This is a qualitative literature review that included 16 peer reviewed articles.

Results

The qualitative data was separated into two main types, professional issues and ethical issues. Conscientious objection for professional issues was further broken down into objections due to the importance of better palliative care, the slippery slope argument, the patient-doctor relationship, family attitudes and the role of the physician. Conscientious objection for ethical issues was separated into the ethical principles of doing no harm, the difference between means and ends, concern for vulnerable patients, the definition of suffering, and that it is fundamentally wrong.

Conclusion

There are a number of different professional and ethical challenges that arise in the debate for legalising and in the practice of Physician Assisted Suicide/ Euthanasia (PAS/E). Many of these issues are centred around a concern for patient safety and wellbeing. PAS/E is a complex ethical issue and its interconnection with the medical profession presents even more challenges. There is ongoing research and clinical practice that needs to be done to create a safer system for patients, and one that allows doctors to feel more confident that they are acting in the best interest of their patients.

PR14: A937 – Suicide prevention pathway: Safety planning in patients at risk of suicide.

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Stapelberg, Chris, Joint Chair in Mental Health, Bond University and Gold Coast University Hospital.

Introduction

The Suicide Prevention Pathway (SPP) is a comprehensive model of care implemented by the Gold Coast Mental Health and Specialist Service (GCMHSS) for consumers following a suicide attempt. A key component of the SPP is Safety Planning, yet, significant numbers of consumers do not complete this component.

Method

Clinical notes of 82 individuals placed on the SPP but without a Safety Plan were reviewed in order to

extract demographic characteristics, service lines, clinical staff performing consumer assessment, presence of a support person, and reasons for not completing a Safety Plan. Descriptive and bivariate analyses were used to describe characteristics and explore associations between variables.

Results

There was an equal number of men and women in the sample, and their ages ranged from 15 to 44 years. 62.8% of consumers were placed on the SPP by the Acute Care Team and 65.1% of consumers were assessed by a Medical Officer. 44.2% of consumers had a support person present during assessment. 48.8% of consumers did not have a Safety Plan due to clinician-related factors, 32.6% due to patient-related factors and 18.6% due to the consumer already having a Safety Plan in place.

Conclusion

This report describes the sample of consumers who do not complete a Safety Plan and the reasons for that. Findings have implications for improving completion of this important intervention and can inform development of future training. Future studies may benefit from further exploring clinician- and patient-related barriers.

PR15: A937 – Suicide prevention pathway: Why do some patients not commence this comprehensive model of care after presenting with suicide attempt?

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Background

The Suicide Prevention Pathway (SPP) is a comprehensive model of care for persons presenting to Gold Coast Health at risk of suicide, particularly following a suicide attempt. However, not all consumers decide to engage with SPP after a suicide attempt. The main aims of this study were to describe this cohort of consumers and explore the reasons for not engaging with SPP.

Method

A cohort of 145 suicide attempt presentations to GCMHSS Emergency Departments between 1 January 2017 and 31 December 2017 were examined. Several variables analysed in this study were extrapolated from the Consumer Integrated Mental Health Application (CIMHA): sex, age, previous engagement with mental health services, health professional completing assessment, whether SPP was offered to consumers, and reasons for not engaging with SPP.

Results

Participants in the study were more likely to be females (68.0%) and in the 40-59 year old age group (30.4%). The majority of consumers (72.8%) had previous engagements with mental health services. Chi-square analysis showed that past engagement with the mental health system did not impact on whether or not the consumer was offered SPP and there was no significant relationship between the health professional completing assessment and whether a consumer was offered the SPP. In most cases (56.8%), no reason for not engaging with SPP was documented. Most frequent recorded reasons included consumers living outside of the Gold Coast catchment area (10.4%) and not meeting the eligibility criteria for the SPP (8.8%).

Conclusion

Effective continuity of care is imperative in patients who present to emergency department with suicide attempt and the findings from this study can help ensure more people engage with the Suicide Prevention Pathway.

PR16: A939 – Unique individuals: Descriptive analysis of patterns and characteristics of transgender persons presenting to hospital with suicide ideation or attempts.

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Introduction

The currently literature is limited regarding the characteristics of transgender persons presenting to ED in suicidal crises, which prevents the development of more targeted models of care for this vulnerable cohort of consumers.

Aim

To analyse and identify the patterns and characteristics of consumers that identify as transgender and present to Gold Coast Emergency Departments with suicidal thoughts or behaviours.

Methods

The data collection and analysis process included using clinical documentation pertaining to 49 suicidal presentations by 21 transgender person to extract relevant variables. Timeframe was 1 January 2018 to 31 March 2019.

Results

The most common age group were those between 10-19 years with almost equal numbers of male-to-female and female-to-male gender identification. The majority of the presentations were via ambulance and had a previous mental health engagement. Only one third of the individual's sex on the system profiles had aligned with their preferred gender identification. For the majority of consumers, their clinical notes included a mention of their preferred names, although in 40%, their names were not updated accordingly on the system profile.

Conclusion

Our findings reflect some of the challenges of transgender individuals presenting to hospital with suicidality, highlighting the necessity to develop a more targeted suicide prevention pathway for this vulnerable community.

PR17: A940 – Trouble in paradise: A retrospective look at the risk factors associated with suicide and self-harm presentations during schoolies.

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Introduction

'Schoolies' is a mass celebratory event marking the transition from compulsory schooling years into adulthood. However, the Schoolies environment can have a detrimental impact to the mental health of its vulnerable adolescent attendees. This study examines the risk factors associated with suicide and self-harm presentations during Schoolies and as a result, aims to enable the development of more targeted suicide prevention strategies.

Methods

A retrospective observational study was undertaken, which examined all suicide and self-harm presentations to Gold Coast Hospital and Health Service (GCHHS) Emergency Departments (ED) from Schoolies attendees during 2017-2019. Data extraction was conducted via the Consumer Integrated Mental Health Application (CIMHA) and data was analysed qualitatively.

Results

The most significant risk factors associated with suicide and self-harm presentations during Schoolies were found to be alcohol use; circumstantial stressors, especially conflict between friends or romantic partners; and a previous history of mental illness or mental health issues, especially previous history of self-harm, suicidal ideation or suicide attempt.

Conclusion

Schoolies is an intensely social and emotional setting, where many of its young attendees consume large amounts of alcohol. This environment
can trigger relationship breakdown, which this study suggests is a major factor in self-harm and suicide presentations during this period. Future suicide prevention strategies should focus on reduction of alcohol intake, as well as education regarding healthy methods of dealing with interpersonal conflict. Furthermore, there may also be some benefit from ensuring that increased supports are in place for attendees with a prior history of mental health issues.

LP1: Chronic variable stress model in mice to determine transcriptional changes in male and female prefrontal cortex.

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Introduction

Chronic Variable Stress (CVS) is an animal model used to simulate major depressive disorder (MDD) which is defined by a collection of symptoms such as depressed mood for most of the day for 14 days. To date, there are no biomarkers or quantitative tests available that are accurate enough for clinical diagnosis. The present study aims to determine coordinated transcriptional changes in the male and female prefrontal cortex (PFC) of chronic variable stress (CVS) mouse relative to the unstressed PFC with changes assessed in relation to the psycho-immune neuroendocrine (PINE) network.

Methods

This study reanalysed publicly accessible RNA sequencing data [1] from the PFC of C57BL/6J mice (20 CVS: 10 males, 10 females and 20 unstressed: 10 males, 10 females). Briefly, the CVS mice were subjected to one of three different stressors every day over 21-days with behavioural tests confirming depressed state. RNA from PFC was sequenced after sacrifice and underwent quality assessment, adapter trimming, mapping to mouse transcriptome and differential gene analysis using bioinformatic tools. Gene Set Enrichment Analysis (GSEA) was then used to determine which biological processes were differentially regulated for comparison to the PINE network.

Results

Bioinformatic analysis of PFC RNA expression showed each sample contained 29.4 million mapped reads on average, corresponding to 14,902 genes which clustered accordingly into four distinct sex-phenotype groups after unsupervised clustering. After differential gene analysis, most of the shared male-female transcripts were down-regulated with the male-only transcripts following a similar pattern. The female-only transcripts were equally regulated in either direction. GSEA revealed more enriched biological processes in female than male corresponding to a total of 36 functional clusters.

Conclusion

These data represent the transcriptional response to CVS in male and female PFC, which will be compared to human MDD PFC transcriptional changes in Stage 2 of the study to reveal biomarkers for diagnostic purposes.

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LP2: Effects of overnight shift work on psychophysiological stress in specialist police training.

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Background

Specialist Police Officers in the United States often elect to become special weapons and tactics team operators as a collateral duty to their regular police work. As a result, they are subject to irregular work hours, prolonged shifts and high stress, even beyond the levels found typically in law enforcement. Heart rate variability (HRV) has been identified as a valuable tool for measuring psychological and physiological stress. The purpose of this study was to determine what effects working an overnight shift may have on the heart rate variability of specialist police during firearms qualification and training events.

Methods

This study was a prospective cohort study of 15 male specialist police officers with an average of 5.2±4.4 years of experience. 3-lead seated ECGs were recorded for 5 minutes prior to the start of training, between 8:00 and 8:30am, and again after the completion of yearly firearms qualification. HRV was assessed as the percentage of R-R intervals that varied by less than 50ms (pRR50). Results from officers who worked the night prior to training (n=6) were compared against those who were rested

(n=9) by determining if significant differences existed in the change between pre- and post-qualification pRR50 values using a 1-tailed Mann-Whitney U test.

Results

There was a significantly greater reduction in pRR50 values between pre and post conditions for operators who worked overnight prior to training, compared to those who slept the night prior to training (p=0.041, one tailed exact).

Conclusion

Rested operators were more resilient to psychophysiological stress; those who worked the previous night experienced a greater response to the stress of the qualification event. Departments with collateral duty specialist police may consider allowing operators shortened shifts prior to training or other scheduling considerations to optimize operator health.

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STREAM 4: PHARMACOLOGY/ONCOLOGY/BIOMED

LP3: Effects of psychological stress on diabetic bladder dysfunction.

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Sellers, Donna, Head of Biomedical Science Program, Bond University, Health Sciences and Medicine

Background

Bladder dysfunction, like overactive bladder and incontinence, is common in the general population, and more prevalent amongst diabetics (2). Psychological stress appears to influence the development of bladder symptoms significantly (1), or worsen symptom severity (3). These patients also experience psychological stress suggesting a bi-directional relationship between psychological stress and bladder dysfunction. Whilst animal and clinical studies have established this link, precise changes and underlying mechanisms have yet to be elucidated. This study aimed to identify local mechanisms underlying changes in bladder function in a model of psychological stress and diabetic bladder dysfunction.

Methods

Female C57Bl/6J mice aged 12-14 weeks were randomly allocated into three experimental groups: Control, diabetic and diabetic exposed to psychological stress. Diabetes was chemically induced and then animals exposed to a standard model of environmental stress (water avoidance) for 10 days. Voiding behaviours were assessed using voiding pattern analysis. Bladder contractility and efferent nerve function was investigated using an isolated whole bladder preparation. Chemical assays for ATP and acetylcholine were used to identify changes in intraluminal chemical mediator release. To study efferent nerve function, the bladder was subjected to electrical field stimulation, and receptor agonists and antagonists were used to investigate changes in neurotransmitter pathways regulating bladder function.

Results

Voiding pattern data currently being generated includes the total voided area, total voided volume, and urinary frequency. Bladder functional data includes, isolated whole bladder pressure responses to various agonists and antagonists, intraluminal ATP and acetylcholine release, and efferent nerve-mediated pressure response to electrical field stimulation.

Conclusion

This study will determine whether stress exacerbates diabetic bladder dysfunction, specifically local mechanisms regulating the functioning of bladder muscle and nerves. Identifying these mechanisms will improve understanding of the role of psychological stress on the lower urinary tract, essential for the development of novel treatment approaches.

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LP4: In-silico family-wide profiling and 3D modelling of the poly (ADP-ribose) polymerase superfamily.

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Introduction

The poly (ADP-ribose) polymerase (PARP) superfamily has generated much attention since its discovery in 1963 due to their involvement in human physiology and disease. To date, only inhibitors of PARP1-3 are clinically approved, however, there is a continual push to develop small-molecule inhibitors beyond PARP1-3. The limitation in the development of new inhibitors has been in achieving selectivity due to the highly conserved catalytic domain. Here, we assessed the X-ray crystal structures and produced homology models of the PARP catalytic domain, WWE domain, and the macrodomains through an *in-silico* profiling.

Methods

Homology modelling was generated by SWISS-Model for enzymes without x-ray crystal structures. Models are generated either by automatic template search or paired with existing X-ray crystal structures. Protein-Protein Basic Local Alignment Search Tool (BLAST) was used to validate and compare structure similarity. UCSF Chimera was used to perform 2D and 3D protein alignment and structural analysis with MatchMaker tool and Clustal Omega alignment tool.

Results

Across the catalytic domains, PARP10's residue were the least conserved with at least six unique residues identified in and adjacent to the binding pocket. In contrast, only 1-3 residues were unique for most other PARPs, with PARP12 being the most conserved with no unique residue. The WWE domains had no conserved residues. And in the macrodomains the macro-2 displayed a protein fold that was conserved although the macro-2 domains have a high level of divergence of the amino acid sequence. Macro-3's binding pocket showed to be superficial and hydrophilic, compared to macro-2 that was buried and hydrophobic.

Conclusion

In summary, we have identified the key unique and conserved residues across the PARP superfamily in hope to lead the next generation of drug discovery.

LP5: Development and application of method to analyse the sialylation of the cancer cells.

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Background

Sialyltransferases (STs) catalyse the transfer of sialic acids (sias) to the cell surface and hence participate in key biophysiological processes in human health and diseases, such as cancer. Therefore, ST is a potent therapeutic target in anti-cancer drug development. However, there are currently no easily obtainable or cost-effective ST inhibitor screening assays to measure the effectiveness of proposed inhibitors. This project aimed to develop a simple method to determine sias in cells to evaluate the extent of sialylation caused by proposed ST inhibitors.

Methods

The most common type of sia in human, N-5-acetylneuraminic acid (Neu5Ac), was successfully detected and quantified via a reverse phase HPLC with triisopropanolamine buffer solution as the ion-pairing reagent.

Results

The proposed method resulted in the successful separation of Neu5Ac with the retention time of 6.344min at 0.4mL/min. The method was validated according to the AOAC guideline: R^2=0.999, LOD=0.002487mM, LOQ=0.007537mM, average recovery of 102% from spiking, with 1.99% and 9.44% of average inter-day and intra-day precision.

From the developed method, deoxycholic acid (DOC) – a known ST inhibitor, was added to the HeLa cells to evaluate the extent of sialylation inhibited by DOC against the control (no DOC added). The proposed method was able to evaluate the extent that DOC changed the sialylation of the cells, as Neu5Ac level decreased significantly as the concentration of DOC increased.

Conclusion

There is a need to search for a potent ST inhibitor to understand the role of sialylation in cancer cells. The proposed method can be applied to evaluate the extent a novel compound could act as a potent ST inhibitor in the cancer cells. Hence, the proposed method may act as a tool in providing a promising new strategy to treat cancer without disturbing physiologically important sialylation.

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LP6: Mirabegron and solifenacin reduce voiding dysfunction caused by psychological stress.

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Chess-Williams, Russ, Professor, Bond University, Health Sciences and Medicine

McDermott, Catherine, Associate Professor, Bond University, Health Sciences and Medicine

Introduction

Our group has previously reported that repeated psychological stress induces bladder changes including increased urinary frequency and enhanced bladder contractile responses in a mouse model of environmental stress[1]. Mirabegron, a beta3-adrenoceptor agonist, and solifenacin, a competitive muscarinic (M3) antagonist, are commonly used clinically to manage the symptoms of bladder overactivity[2,3]. However, there is a lack of evidence to support their effectiveness for bladder dysfunction caused by psychological stress. This study investigates the hypothesis that mirabegron and/or solifenacin may aid in reducing the bladder overactivity caused by psychological stress.

Methods

Treated mice were given mirabegron and solifenacin in their drinking water during the full 10-day stress protocol. Water avoidance stress mice and drug treated mice were placed on a central pedestal surrounded by room temperature water for 1hr/day for 10 days. Controls were age-matched and housed normally without environmental stress exposure. Voiding behaviour was assessed during the stress protocols. Mice were euthanised 24 hours after the final stress exposure and a blood sample was taken to measure plasma corticosterone levels. Bladders were removed, catheterised and intravesical pressure responses recorded during distension and in response to pharmacological agents.

Results

A significant increase in urinary frequency was observed following stress exposure, evident by day 3. Mice treated with mirabegron and solifenacin during the stress exposure displayed significantly fewer voiding events compared to the Stressed group ($p<0.001$), and frequency in treated animals was similar to unstressed controls. Psychological stress caused a significant increase in plasma corticosterone when compared to unstressed control mice. However, animals treated with solifenacin or mirabegron during the stress protocol did not have elevated levels of the stress hormone. Drug treatment did not protect against the enhanced contractile response to muscarinic receptor stimulation with carbachol seen following psychological stress exposure.

Conclusion

Exposure to water avoidance stress induced bladder dysfunction, as seen in our previous studies. While mirabegron and solifenacin did not

influence the contractile responses of the bladder, the significant decrease in voiding frequency of the treated mice indicates that solifenacin and mirabegron are beneficial in reducing overall voiding dysfunction.

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LP7: Blood flow to the bladder is controlled by two subtypes of α1-adrenoceptor.

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Introduction

Bladder dysfunction has been linked to reduced blood flow to the bladder. Tamsulosin, an α_1-adrenoceptor antagonist used to treat benign prostatic hyperplasia, reduces lower urinary tract symptoms in women. Its action may also include an effect on bladder blood flow. Three subtypes of α_1-adrenoceptor (α_{1A}-, α_{1B}-, α_{1D}-) exist. The aim of this study was to determine the α_1-adrenoceptor subtype(s) controlling vasoconstriction of the superior vesical artery, the vessel that supplies blood to the bladder, and whether tamsulosin could influence blood flow.

Methods

Porcine superior vesical arteries were obtained from a local abattoir. Circular sections were mounted in organ baths containing oxygenated physiological solution (37˚C). Contractions to noradrenaline or phenylephrine (selective α_1-adrenoceptor agonist) were obtained in the presence and absence of the α_1-adrenoceptor antagonists: tamsulosin ($\alpha_{1A/D}$), BMY-7378 (α_{1D}), RS-100329 (α_{1A}), RS-17056 (α_{1A}) and SB-216469 (α_{1A}). Contractions to A-61603 (potent α_{1A}-adrenoceptor agonist) were also obtained in the presence and absence of RS-100329.

Results

All antagonists depressed contractions to phenylephrine and noradrenaline. The α_{1A}-adrenoceptor antagonists had a high affinity, whilst the α_{1D}-antagonist had a low affinity. This suggests the α_{1A}-adrenoceptor is the important receptor in this tissue. However, the data indicates that this is not the only subtype involved in mediating contractions. Tamsulosin, RS-100329, RS-17056 and SB-216469 did not antagonize responses uniformly. The higher concentrations of noradrenaline and phenylephrine were antagonized more than the lower concentrations, suggesting different receptors were mediating responses to low and high concentrations of the agonists. Normal parallel rightward shifts of concentration-response curves to A-61603 were obtained, but not with phenylephrine or noradrenaline.

Conclusion

Porcine superior vesical arteries express two α_1-adrenoceptor subtypes. Data suggests noradrenaline contractions are mediated via a mixed population of α_{1A}- and α_{1B}-adrenoceptors. The α_{1A}-adrenoceptor is present in the prostate and is blocked by tamsulosin suggesting that this drug may also exert effects on bladder blood flow when used to treat BPH.

Reference

1. KE, Andersson; Boedtkjer, D; Forman, A, Ther Adv Urol, 2017, 9(1): 11-27

LP8: Natural or synthetic stimulants? Trace amines and synephrine enantiomers found in citrus aurantium-listing pre-workout supplements by LC-MS.

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Background

The popularity of weight-loss and pre-workout supplements (PWS) has been associated with adverse cardiovascular effects[1]. Bitter orange (*Citrus aurantium)* extracts are a common ingredient in PWS that contain the sympathomimetics, *p*-synephrine, *p*-octopamine and *p*-tyramine. However, the origin of these amines is questionable due to discrepancies between the labelled and content found in previous analytical methods. This study aimed to produce an LC-MS fingerprint profile for the three amines and enantiomeric ratios of *p*-(±)-synephrine in standardized reference materials (SRMs) and compare it to PWS.

Methods

Three SRMs and fifteen bitter orange-listing PWS were analysed under two reversed-phase LC-QDa-MS chromatographic separation protocols. Quantitative method used an XBridge BEH C18 with an ammonium carbonate buffer (pH 10.0; 5mM and UV detection at 242 nm). Quantifications were based on the racemic amine standards. Enantiomeric separations were on a Chiral-CBH column with methanol (15%, w/w) in ammonium acetate buffer (pH 7.0, 5mM), with UV detection at 225nm. A QDa mass detector provided structural confirmation in ESI+ mode.

Results

Trace amines and enantiomeric ratios of the SRMs support the current literature where (-)-synephrine was the main amine of bitter orange, whereas octopamine, tyramine and (+)-synephrine were present in low concentrations. Only 3/15 PWS had trace amine ratios (octopamine: synephrine: tyramine) similar to that found in the plant SRMs. Furthermore, 30% of supplements had a natural synephrine ratio. The remaining 40% of supplements showed a synthetic racemic synephrine profiles or higher amounts of (+)-synephrine**.**

Conclusion

This study used bitter orange SRMs as a positive control for a natural ratio of amines and synephrine enantiomers. Only 20% of the supplements (3/15) had trace amines and enantiomer profile that suggests a natural origin. Variability of trace amine composition in PWS presents increased risks to consumers, especially when supplements often contain a cocktail of stimulants, including caffeine and other plant extracts.

Reference

1. Eudy, A.E., et al., Efficacy and safety of ingredients found in pre-workout supplements. Am J Health Syst Pharm, 2013. 70(7): p. 577-88.

OP2: Mobile devices/smartphones as potentially hazardous fomites.

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Grimwood, Keith, Griffith University and Gold Coast Health
Ugail, Hassan, Centre for Visual Computing, University of Bradford
Mahboub, Bassam, Dubai Health Authority
Alawar, Hamad, Dubai Police, Dubai, United Arab Emirates (UAE), Council, Dubai Police, Dubai, United Arab Emirates (UAE)
Alghafri, Rashed, Faculty of Health Sciences and Medicine, Bond University

Introduction

The use of mobile phones is ubiquitous all over the world not only for personal use but also in professional medical settings. The absence of strict infection control guidelines and decontamination of these 'trojan horse' devices may pose a risk in and out of the hospital and lead to an increase in both hospital-acquired and community-acquired infections. This study aimed to investigate the viable colonisation of microbes on mobile phones of health care personnel in a clinical setting.

Methods

A study involving culture and next generation sequencing of swabs derived from a total of 30 mobile phones sourced from healthcare personal working in three acute care paediatric

settings of Gold Coast University Hospital, Australia. Questionnaires were filled and recorded to assist in the analysis.

Results

All phones were contaminated with bacteria. A total of twelve (12) constantly present bacteria were isolated in more than half of all 30 phones and included Staphylococcus aureus (93%), Micrococus luteus (93%), Staphylococcus hominis (93%), Staphylococcus epidermidis (90%), Staphylococcus saprophyticus (77%), Staphylococcus capitis (73%), Acinetobacter baumannii (67%), Bacillus cereus (63%) and Pseudomonas aeruginosa (60%). A total of 520 antibiotic resistance genes were isolated across all 30 phones. The most important pool of antibiotic resistance genes were the efflux pumps, beta-lactam resistant genes, macrolides and aminoglycosides. Additionally, 86% of all studied phones were contaminated with fungal micro-organisms and a total of 734 bacterial viruses were retrieved from all phones.

Conclusion

Mobile phones are Trojan horses that might contribute to nosocomial diseases and community-acquired infections with subsequent deterioration of human health while contributing to a public health cost burden. Further research is warranted, however we call for public health authorities to implement practical guidelines to reduce the specific risk from these mobile, personal 'petri dishes', that are likely to be causing and spreading illness as we travel around the globe.

OP3: The anxiolytic sertraline prevents the effects of psychological stress on voiding behaviour and contractile bladder responses.

West, Eliza, PhD Candidate, Centre for Urology Research, Bond University, Health Sciences and Medicine

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Chess-Williams, Russ, Professor, Bond University, Health Sciences and Medicine

McDermott, Catherine, Associate Professor, Bond University, Health Sciences and Medicine

Background

A body of clinical evidence has linked bladder disorders with psychological stress, depression, and anxiety. Sertraline is a selective serotonin reuptake inhibitor, commonly used to treat several mental health disorders, including major depressive disorder and social anxiety disorder[1]. Our group has previously reported that environmental stress induces a hormonal stress response and produces an overactive bladder phenotype in mice[2]. This study investigates the hypothesis that sertraline treatment will reduce the bladder dysfunction and overactive voiding behaviour caused by environmental stress.

Methods

Treated mice were given sertraline in their drinking water 10 days prior and stress was induced by placing mice on a central pedestal surrounded by room temperature water for 1hr/day for 10-days. Controls were age-matched and housed normally without environmental stress exposure. Voiding pattern analysis was performed during the stress protocols. Mice were euthanised 24 hours after the final stress exposure and a blood sample was also taken to measure plasma corticosterone levels. Bladders were removed, catheterised and intravesical pressure responses recorded during distension and in response to stimulation of muscarinic receptors with carbachol and efferent bladder nerves with electrical field stimulation.

Results

Repeated exposure to water avoidance stress caused a significant increase in plasma corticosterone levels ($p<0.05$) in the Stressed group, while levels of the hormone in sertraline treatment animals was equivalent to unstressed controls. Voiding frequency was significantly increased in the Stressed group, 24-hours after the first stress exposure compared to unstressed control animals. Treatment with sertraline, significantly decreased voiding frequency compared to that of Stressed mice, however voiding frequency remained elevated compared to control animals. Stressed mice displayed significantly enhanced contractile bladder responses to muscarinic stimulation, which was significantly reduced to control levels by sertraline treatment.

Conclusion

Repeated exposure to water avoidance stress induced bladder overactivity. Treatment with sertraline decreased the effects of stress on voiding behaviour, although not to control levels. Stress-induced changes in bladder contractile responses were prevented by sertraline treatment. These results indicate that treatment of bladder dysfunction caused by environmental stress may be aided by the addition of an anxiolytic such as sertraline.

References

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OP4: In silico identification and in vitro activity of natural products as ADP-ribosyl transferase member 8 (ARTD8) inhibitors.

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Schweiker, Stephanie, Assistant Professor, Bond University, Health Sciences and Medicine

Levonis, Stephan, Assistant Professor, Bond University, Health Sciences and Medicine

Background

Natural products have long been a productive source of drug leads for the development of new therapies including anti-infectives and anti-cancer agents. Identifying potential targets of these natural products may assist in designing more tolerable treatments for a range of diseases. One such target may be the ADP-ribosyl transferase member 8 (ARTD8, alternatively named PARP14, BAL2 and COAST6), a post-translational modifier enzyme with an associated role in promoting disease-progression in many cancers, including prostate and hepatocellular cancer. However, there is currently a lack of experimental evidence to prove the association between natural products and ARTD8 inhibition.

Methods

Actives from natural products with a documented anti-cancer activity were docked into the catalytic site of 3SMI.pdb using PyRx and AutoDock Vina. Lead compounds from the docking studies were also assessed for their *in vitro* activity against ARTD8 at 20 mM and 10 mM concentrations.

Results

In silico docking revealed epigallocatechin gallate (EGCG), trans-resveratrol, indol-3-carbinol, curcumin, quercetin, and naringenin as potential ARTD8 inhibiting compounds. The subsequent *in vitro* assay revealed EGCG and quercetin as lead compounds, with EGCG displaying complete inhibition at 10 mM. Both EGCG and quercetin docked poses where shown to span across the nicotinamide and adenine sub-sites of the catalytic domain, interacting with conserved residues Ser1641 and/or Ser1607 and Tyr1646 of ARTD8.

Conclusion

The *in silico* docking and *in vitro* studies present both EGCG and quercitin as potential ARTD8 inhibiting compounds. Structural analysis of these leads also suggests that the meta-hydroxy group on the catechin ring B backbone maybe responsible for these inhibition effects.

References

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OP5: Multiple treatments with the cytotoxic drug cyclophosphamide alter voiding behaviour and bladder physiology.

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McDermott, Catherine, Associate Professor, Bond University, Health Sciences and Medicine

Chess-Williams, Russ, Professor, Bond University, Health Sciences and Medicine

Background

Cyclophosphamide (CPO) is a chemotherapeutic agent used for treating a variety of cancers and autoimmune disorders. The most commonly reported side effects of CPO pertain to bladder discomfort, inflammation, and cystitis. Although the exact mechanism causing these problems is mostly unknown, it is thought to be associated with a toxic urinary metabolite of CPO, acrolein. These side effects are a major limiting factor of the drug treatment. This study investigates the effects of multiple doses of CPO on voiding behaviour and bladder physiology in this model.

Methods

Male C57BL/6J mice (12-14 weeks) were treated intraperitoneally with saline (controls) (n=6) or CPO (80mg/kg) (n=6) over a 7-day period on days 0, 2, 4, and 6. Voiding pattern analysis was performed on days 0, 1, 3, 5, and 7 of the protocol, and mice were sacrificed on day 8. The lower abdomen was secured in a 30mL bath and a 2-way catheter was inserted into the bladder via the urethra and connected to a syringe pump to allow bladder filling and distension. Additionally, a catheter attached to a pressure transducer was inserted into the dome of the bladder allowing for the measurement of intravesical pressure changes.

Results

Multiple dose injections of CPO caused increased voiding frequency in mice compared to sham injected control mice, with a significant difference ($P<0.05$) observed by day 3. Compliance of bladders was also significantly reduced ($P<0.01$) by multiple low doses of CPO. The volume at 35mmHg was reduced from 356.58 ± 27.37mL in the control group to 215.00 ± 33.42mL in the treated group.

Conclusion

Multiple doses of CPO cause increased voiding behaviour and altered physiology of the mouse bladder. Compliance was significantly reduced by CPO treatment. This decreased ability to hold larger volumes likely accounts for the increased urinary frequency seen in the CPO treated mice in this study.

STREAM 5: GLOBAL HEALTH & PLANETARY HEALTH A

PR18: C901 – The challenges of diagnoses and treatment of a child with altered sensorium in Kirakira Hospital.

Chua, Melissa, 5th year medical student, Bond University, Health Sciences and Medicine
Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine
Wan, Annelise, Paediatrician, Gold Coast University Hospital

Background

Tuberculosis (TB) is an airborne bacterial infection caused by mycobacterium tuberculosis. It is one of the top 10 causes of deaths worldwide. Although rare compared to pulmonary TB, tuberculosis meningitis (TBM) can occur as a result of TB infection. In 2018, 1.1 million children were infected with TB worldwide and 205,000 deaths occurred from it (1).

Case Summary

Our case details a 3-year old girl who presented to Kirakira Hospital with 2-week history of fever and altered sensorium associated with 1 week of vomiting and anorexia. This was on the background of a misdiagnosis of pneumonia 2 months earlier. On examination, she had a GCS of 6 with signs of meningism and raised intracranial pressure. Cardiovascular, respiratory and abdominal examinations were normal. Investigations performed included a FBC (WCC 13.3 x 10^9/L), malaria peripheral smear (PV positive 6/200 per high powered field) and a negative Mantoux test. She was initially treated as a case of cerebral malaria with no improvement to her condition. The diagnosis of TB meningitis was made later and she was treated with TB medications. Unfortunately, while the diagnosis of TB meningitis remained highly likely, due to the late presentation of the case and delayed diagnosis, patient X did not improve and remained in a chronically obtunded state.

Conclusion

This case details the challenges involved with diagnosing and treating a critically ill child in a resource poor setting. It highlights the importance of early disease recognition, good health literacy

and the need for an improved paediatric healthcare system in Kirakira.

References

1. Tuberculosis. World Health Organisation Web site. https://www.who.int/news-room/fact-sheets/detail/tuberculosis. Published March 2020. Accessed April 1, 2020.

PR19: C901 – Weight loss, dizziness and hyperglycaemia: A diagnostic dilemma of a 54-year-old female in the Solomon Islands.

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Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine
Wan, Annelise, Consultant Paediatrician, Gold Coast University Hospital

Background

Globally, type 2 diabetes mellitus (T2DM) has reached epidemic levels. In the Solomon Islands alone, it was reported to have accounted for 7% of deaths in 2016 and costed the government 20% of its annual health expenditure. This has contributed to financial difficulties, poverty and presents a continuous burden to the health system of the country.

Case Summary

ML, a 54-year-old female presented late in her illness with body weakness, dizziness and a blood sugar level of 24.7. This was associated with abdominal pain, shivers and a weight loss of 40kg from 80kg over 5 months. She was clinically dehydrated, cachectic and complained of calf aches and numbness in her feet. As investigations were limited to a full blood count and blood sugar levels, ML was diagnosed with T2DM and treated accordingly with fluids, insulin, metformin and antibiotics to cover for any co-existing infections. Other differential diagnoses such as malignancy were not investigated. Throughout her admission, blood sugar levels remained high and slowly decreased to normal levels after 2.5 weeks.

Conclusion

T2DM is a chronic condition that is a great burden on any healthcare system, however it can be detected early to prevent serious complications. In the Solomon Islands, many patients present late with complications as there is no screening. In combination with the lack of resources for investigations and treatment, other possible causes of the disease cannot be fully explored, leading to inaccurate diagnoses and management. The prevention and detection of disease early on is therefore vital in improving morbidity and mortality.

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PR20: C901 – Acute cardiac failure secondary to rheumatic heart disease in a 25-year-old female in the Solomon Islands.

Pius, Piyush, 5th year medical student, Bond University, Health Sciences and Medicine
Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine

Case study

This case involves a 25-year-old female (Mrs ST) who was referred to Kira Kira Hospital (KKH) with severe dyspnoea at rest. She was tachypnoeic, tachycardic and borderline hypotensive at presentation, with other vitals being normal. She reported exertional dyspnoea, orthopnoea, generalised body weakness and palpitations in the 2-3 days preceding her presentation, with nil experience of similar symptoms prior. Past medical history includes multiple URTI's and episodes of polyarthritis, raising the suspicion of ARF. Chest examination revealed a pansystolic murmur heard loudest over the mitral area with bi-basal crepitations and globally reduced air entry. Her liver was palpable with bilateral pitting oedema extending to the knee. FBC revealed moderate anaemia, and CXR findings coupled with the presentation was suggestive of acute congestive heart failure (CHF) de novo likely secondary to Rheumatic Heart Disease (RHD).

Management

Short-term management included ordering a blood transfusion and commencing treatment for acute exacerbation of CHF. Long-term management included commencing prophylactic therapy against

ARF and referral to the National Referral Hospital in Honiara for an echocardiogram to confirm RHD.

Cases summary

This case highlights how the social determinants of health affect the overall health outcomes of people in the Solomon Islands. This includes how a remote location leads to delayed presentation to hospital, and how the lack of resources leads to difficulties in managing a condition.

PR21: C901 – The effect of climate change on non-communicable diseases in the Solomon Islands and a possible environmentally sustainable solution in achieving the SDG 3, indicator 4.

Hafezi, Arezo, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Global environmental changes (GECs) are planetary-scale changes that are related specifically to human activity. Climate change, a component of GECs, poses many risks to human health through sea level rise, extreme heat, increase in natural disasters and changing rainfall patterns.[1] These changes result in destruction of homes and livelihoods, loss of traditional food sources, malnutrition, and increased reliance on imported and processed foods, leading to many health issues such as increased burden of non-communicable diseases (NCDs).[1]

The Solomons situation

The Solomon Islands is a collection of small islands located in the southwest of the Pacific Ocean.[2] The geographical position of Solomon Islands makes it particularly vulnerable to natural disasters, which are exacerbated by the impacts of climate change.[2] Looking at Sustainable Development Goal (SDG) 3 (good health and wellbeing), indicator 4 (reduction of NCDs), Solomon Islands is struggling in achieving this goal with NCDs accounting for about 69% of all deaths and projected trends predicting an even bigger challenge without appropriate strategies in place.[3] Using a Systems Thinking approach, a possible environmentally sustainable solution would be training of Solomon Islander health professionals with a focus on planetary health and health impacts of climate change. Furthermore, a mandatory short-term moratorium for health professionals in rural and remote regions, in addition to carrying out an onsite environmentally sustainable project, could help identify and address the issues contributing to NCDs. However, there are certain barriers in setting up, ownership and implementation of such project that need to be considered.

References

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PR22: C901 – The effect of climate change on those living in poverty in the Solomon Islands.

Isaac, Marina, 5th year medical student, Bond University, Health Science and Medicine
McLean Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Climate change has a huge impact on the environment world-wide, in particular in the Solomon Islands. This research was conducted to identify the effects and a solution to the issue of climate change on those living in poverty in the Solomon Islands.

Methods

The methodology included a literature review and analysis.

Results

Sea levels are rising in the Solomon's at a rate that is higher than anywhere else globally, and there is prediction that it will rise by another 50 cm in the next decade.[1] The rising air temperature and changing rainfall patterns have affected the native crops and agriculture, which is the main driver of the economy and source of produce for many of the

villagers, exacerbating their level of poverty.[2] Many locals have noticed a big change in the environment in the last 50 years as they have been driven to locate further inland due to the rising sea levels. There has also been changes in their diet which has shifted from natural resources from the ground to other processed food which is now cheaper and more available then the natural resources they once relied on.

Conclusion

These changes are not sustainable for the villagers and many projects have already been set up to help slow down the effects of climate change on the Solomon Islands. However global education on the matter and a movement for change is vital in order to save the islands.

References

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PR23: C901 – Impact of climate change on Indigenous Australians' health.

Sajikah, Jeyananthan, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Background

This video presentation will focus on climate change and its impact on Indigenous Australians' health as well as solutions to overcome these issues. Climate change refers to the long-term rise in Earth's temperature leading to changing weather patterns, with estimation that in Australia by 2030, annual average temperatures will be 0.4 to 2.0°C higher over most areas, with potential for greater warming effects in the north-west regions. The Indigenous Australians are considered a vulnerable population that will face direct consequences due to their dependence upon, and unique relationship with the environment, with health impacts intensified by their social and economical disadvantage and geographical isolation. This presentation will explore how non-communicable diseases, communicable diseases and mental health are negatively affected by the changes due to climate change.

Methods

A system and design thinking approach was applied to exploring the possible solutions that may reduce the impacts of climate change on Indigenous Australian's health.

Results

The rising temperature increases the frequency of extreme weather, heat-related illnesses, communicable and non-communicable diseases and serious mental health consequences within the Indigenous Australian community.

Conclusion

Climate change has and will continue to have a great impact on the health of the Indigenous Australian population, highlighting the urgent need to implement strategies to overcome these issues. There are generally two approaches, namely adaptation and mitigation that deal with climate change. An adaptive strategy involves detection and early warning systems, whereas mitigation involves the WALFA project that has seen reduction in greenhouse gases, as well as economic, social and cultural benefits.

PR24: C901 – Tackling dengue fever in Solomon Islands in the face of global environmental change.

Jones, Daniel, 5th year medical student, Bond University, Health Sciences and Medicine

McLean Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction/ Background

While human health has improved remarkably this past century, continued environmental degradation threatens to reverse these health gains. Small island nations like the Solomon Islands are recognised as particularly vulnerable to climate change and are at increasingly significant risk of vector-borne disease outbreaks such as dengue fever. With the United Nations Sustainable Development Goals in focus, this presentation explores the literature that identifies the factors that make Solomon Islands at risk of more frequent and severe dengue outbreaks. I will then discuss

recommended strategies that have been identified to address these risks.

Methods

In June 2020, a computerised search of google scholar entries was performed to identify studies of climate change, and dengue fever in Solomon Islands with the search limited to publications from January 1, 2009 to June 2020. Citation lists from these studies were searched to find addition relevant studies listed on other electronic global databases.

Results

The Solomon Islands is expected to experience more frequent tropical storms, sea level rise and erosion, with resultant water salinisation with subsequent crop failure, and drought as a result of climate change. These events cause mass migration or displacement and increase vector populations, combining to impose greater threat of dengue fever. Adaptation and mitigation strategies must be adopted to address this challenge.

Conclusion

Dengue fever is becoming more frequent in Solomon Islands due to climate change. Strategies include both adaptation and mitigation approaches and will require robust, well-funded, multimodal, and worldwide policy to reduce the risk that dengue fever poses.

IG4: C901 – Water, sanitation and hygiene in the Solomon Islands.

Trang, Jacinta, 5th year medical student, Bond University, Health Sciences and Medicine

McLean Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

In this video, I explored the impact of climate change, changes in hydrological systems and supplies of freshwater on the Solomon Islands. I discussed how this affects the country's progress towards Sustainable Development Goal (SDG) 6, which aims to "ensure availability and sustainable management of water and sanitation for all". I also highlighted differences in water and sanitation access and services that currently exist within urban and rural communities and proposed possible solutions to the inequalities that exist nation-wide.

Method

Both design and systems thinking were applied. Seven essential steps that were identified include empathy, identifying the problem, education, community participation and empowerment, adaptation projects, government involvement and conservation.

Solutions

Strengthened action and collaboration between local community members and the local, state and national government as well as external organisations are crucial to ensuring that solutions are relevant, sustainable for future generations and beneficial to both the community and environment. These solutions ranged from hygiene promotion, education of the community around water treatment processes, adaptation to the designs of sanitation services as well as conservation of natural environments such as coastal mangroves.

Conclusion

Solomon Islanders are disproportionately shouldering the effects of global environmental changes which must be addressed as the nation works towards the SDGs. While improvements have been seen in the water, sanitation and hygiene situation, it is evident that they are still far off from achieving SDG 6 by 2030 and future multidisciplinary efforts will be crucial to the achievement of this goal.

STREAM 6: GLOBAL HEALTH & PLANETARY HEALTH B

PR25: C901 – A preventable demise: The challenges of palliating a 4-year-old Solomon Islands boy diagnosed with a treatable malignancy.

Singh, Grace, 5th year medical student, Bond University, Health Science and Medicine

Jones, Peter, Professor of Paediatric Medicine, Bond University, Gold Coast University Hospital

Introduction

Acute lymphocytic leukaemia (ALL) is the malignant conversion of haematopoietic stem cells, specifically, lymphocytic progenitors. This leads to cell proliferation in the bone marrow, peripheral

blood and extramedullary sites. Studies have made links to genetic syndromes and environmental risk factors; however, a predominance of cases emerge as de novo malignancies in otherwise healthy individuals.

Case Study

This report examines the case of a 4-year-old boy in Kirakira Hospital, Solomon Islands. He presented with spontaneous gingival bleeding on a background of suspected ALL. He was provisionally diagnosed in Honiara before returning home with his family for palliative care. The course of his admission revealed continual bleeding, bruising and severe bone pain that was managed with gauze, regular blood transfusions and simple analgesia. Examination findings suggested clinical pancytopenia confirmed by pathology that demonstrated severe anaemia and thrombocytopenia. Following improvement in thrombocytopenia, he was discharged home with a plan for transfer to Honiara hospital for a diagnostic bone marrow aspiration.

Learning Points

This is an unfortunate case that exemplifies the harsh health-related realities of a poverty-stricken nation. It battles the inequities of palliating a child with a treatable condition whose only hindrance to adequate care is his geographical location. This report teaches us to be humble and grateful for the privileges we unknowingly receive. It also teaches us to be knowledgeable about our world and learn from such individuals of whom many appear to live in great contentedness despite these tragedies.

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PR26: C901 – Malnutrition in Solomon Islands.

White, Erika, 5th year medical student, Bond University, Health Sciences and Medicine.

Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine

Wan, Annelise, Paediatrician, Gold Coast University Hospital

Background

Malnutrition is one of the leading global burden of disease and although a rarity in Australia its prevalence and potential consequences, particularly for infants and young children, are paramount in Solomon Islands community.

Case Summary

This presentation explores the case of a 13-month old boy SW who presented to the Kirakira hospital with a history of fevers, bilateral pitting oedema of the extremities, skin discolouration, and recent adoption consistent with a severe acute malnutrition Kwashiorkor. Since the cessation of breast feeding in the months before SW's admission, his diet consisted of no major source of protein; eating only pawpaw and vegetable soup. He underwent limited investigations: Hb 67, WCC 5.9, CXR NAD and MPS negative. He was supplemented with ferrous sulphate suspension, sunshine milk feeds (substitute for F75) and observed clinically throughout his 12-day admission. He made a successful recovery and was reviewed in clinic 1-week post discharge to be clinically well despite the lack of resources and sub-optimal treatment provided.

Conclusion

The case highlights a multitude of issues including poor nutritional knowledge and parental health literacy, as well as a lack of resources within the hospital and pharmacy. Although resources are imperative within a hospital to adequately manage children with malnutrition, it is important to look at the source of the issue which was the lack of fundamental nutritional knowledge of a healthy diet. Education and empowerment for individuals, households and communities to make educated food choices is therefore the foundation for improving the nation-wide nutrition.

PR27: C905 – The silent killer: A comparative study of anaemia in pregnancy and associated perinatal complications between Australia and India.

Sheriff, Nashwa, 5th year medical student, Bond University, Health Sciences and Medicine
Mansour, Ibrahim, 5th year medical student, Bond University, Health Sciences and Medicine
Jones, Peter, Professor of Paediatric Medicine, Bond University, Gold Coast University Hospital
Maheshwari, Neelam, Associate Professor of Pathology, Bond University, Gold Coast University Hospital

Background

Anaemia is one of the most prevalent health problems in the world, affecting almost half a billion women of reproductive age. The highest prevalence of this condition is seen in the developing world; with multi-factorial aetiology. In India, one in every five maternal deaths is the direct result of anaemia. Similarly, adverse perinatal outcomes including preterm and low-birth weight deliveries have also been associated with maternal anaemia.

Case Summary

This report outlines the case of a 21-year-old Indian woman at (37+1) weeks gestation who presented to Radhanpur Woman & Child Hospital in Gujarat, India with worsening fatigue and postural dizziness. This woman had no antenatal care due to a low level of education and poverty. Clinical examination and basic laboratory investigations confirmed a diagnosis of Iron-Deficiency Anaemia. Despite commencement of oral iron and folate supplementation, at (37+5) days gestation, a low-birth weight baby was delivered. This case depicts the association between severe, untreated anaemia in pregnancy and perinatal complications.

Conclusion

This case sheds light on a highly prevalent medical condition in low resources countries. It highlights the urgent need for the improvement of nutritional status through community awareness and education. Knowledge of the socio-demographic factors such as poor health literacy, access to health care and cultural beliefs are key components in addressing this slow killer in Indian populations.

PR28: C901 – Freshwater and sanitation solutions for the Solomon Islands.

Kuo, Matthew, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

The sustainable development goals (SDGs) are a global partnership between developed and developing countries, advocating for actions to reduce inequality, address climate change and promote good quality of life for all. Of these goals, SDG 6 (Ensure availability and sustainable management of water and sanitation for all) remains a challenge for the Solomon Islands. With only 64% of the population having access to basic drinking water services and 31% having access to proper sanitation services, there is a lot of room for improvement.[1] In more rural areas, the effects are more pronounced. Furthermore, climate change has the potential to worsen this situation through direct and indirect effects on the environment.[2] Therefore, a systematic approach is important for addressing these issues and promoting health and wellbeing through adequate water, sanitation and hygiene services (WASH). This approach ensures that the population not only has these services available but aims to create them in a self-sustainable way. This presentation introduces ideas such as climate resilient infrastructure and cross-sectorial collaboration.[3] Finally, dry sanitation is suggested as a potential idea to explore as a sustainable option to save water and improve sanitation in the Solomon Islands. However, this solution has its limitations, which will be discussed.

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PR29: C901 – Impact of climate change upon malaria in the Solomon Islands.

Lam, Monique, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

It has become apparent that the earth is not only a living system but is the ultimate determinant of health. Through our attempt to create a fully industrial world where economic growth is the most valued form of progress, we have mortgaged the health of future generations by unsustainably exploiting natures resources. We are currently transgressing ecological thresholds to the extent where our planet is in danger of the first human-caused mass extinction.

Malaria and climate change

This paper explores how the Sustainable Development Goals (SDGs) 2015-2030 have created a blueprint to balance human prosperity with protecting the planet and achieving environmental sustainability. It focuses upon SDG goal 3.3 - the effects of climate change upon malaria incidence within the Solomon Islands. There is some research projecting the increased burden of infectious diseases as a result of climate change. The main predicted changes include how increasing temperature and erratic rainfall patterns speed up the life cycle of mosquito vectors and increase larvae survival rates. As well as how a changing climate alters distribution patterns of disease, whilst altered weather extremes effects disease outbreak and severity. We must act now and prioritise the health of our planet before economic progress and improve our healthcare systems in response to changing disease epidemics. To do so, we must conduct further research into the consequences of climate change upon human health, and develop guidelines to prepare for predicted changes. A more innovative approach is also required to assist developing countries to decrease spread of infectious diseases, such as new novel research into blockage of viral replication in mosquitoes to decrease transmission routes.

PR30: Planetary Health: A focused review of the Solomon Islands' progress towards achieving the sustainable development goals.

Huynh, David, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

The Sustainable Development Goals (SDGs) were formed by the United Nations to guide our world towards a better future so all people may enjoy peace and prosperity. Fundamental to accomplishing these goals is the need for environmental protection and good planetary health. The environment has direct impacts on the world's socio-economic development. Hence, global environmental changes (GECs) have profound effects on progress towards achieving the SDGs. This review explores the relationship between GECs, malnutrition and vector-borne diseases and the impacts these have on the Solomon Islands. By understanding this, their progress towards achieving a state of zero hunger and good health and wellbeing can also be determined. Strategies to improve the Solomon Islands' progress are also explored.

Methods

Information and data about GECs, malnutrition, vector-borne illnesses and the Solomon Islands were collected through reviewing relevant research articles available on NCBI and reputable internet websites. Information and data was utilised only if they were well supported by other sources.

Results

Climate change and GECs negatively impact health issues such as malnutrition and vector-borne illnesses. Rising air temperatures, rising sea levels and more frequent extreme weather events worsen food security by decreasing crop yields, and increase the incidence and prevalence of malaria and dengue fever by creating more suitable breeding conditions for mosquitoes.

Conclusion

The Solomon Islands are not on track to achieve the SDGs by 2030. To do so, it is essential they take action now and implement strategies to mitigate the negative effects of GECs on health and well-being.

PR31: B903 – Planetary Health: ESME course and a video summary of the sustainable development goals for medical students.

Farrah, Isabella, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Education is a core component of a medical career, with the Hippocratic oath containing the lines "I swear … to teach this art … without fee or indenture". My MD project was therefore designed to improve my own abilities in medical education and then apply these abilities to the creation of a video on the United Nations' 2030 Sustainable Development Goals (SDGs) for first year medical students, with the goal of improving education about planetary health, an important topic that does not receive the attention it merits in medical curricula.

Methods

To develop skills in medical education, apply them in a practical setting and improve the available information on planetary health, I completed the Association for Medical Education in Europe's (AMEE) online student Essential Skills in Medical Education (ESME) Course and created a multimedia Planetary Health presentation.

Results

The project outcomes were a certificate in the student ESME Course, and a 20-minute educational video on the United Nation's SDGs, comprising a voice-over narration and a series of stills, video clips and infographics.

Conclusion

This project assisted me to develop educational skills through the ESME Course, provided an avenue to explore my personal approach to education and outlined the FAIR principles (Feedback, Active learning, Individualised content and Relevant information) to apply to educational opportunities moving forward. The video provides a useful resource for education about planetary health and its relevance to medical students and practitioners.

IG5: C901 – Palliative Care for cervical cancer in Solomon Islands.

Ahmed, Abrar, 5th year medical student, Bond University, Health Science and Medicine
Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Science and Medicine

Introduction

This case discusses the diagnostic approach and management of Palliative Care in the Solomon Islands. With emphasis on managing the complications of cervical cancer in a setting where no further investigations are possible and alternative procedural options are unavailable in the resource poor hospital.

Case Presentation

Mrs V, a 36-year-old housewife was referred to Kirakira Hospital (KKH) presenting with 1-year history of back pain, urinary urgency and infective symptoms. She commenced on nitrofurantoin for suspected urinary tract infection (UTI), and paracetamol and indomethacin for back pain relief. On vaginal examination there was an adnexal mass that was extending to the midpoint of pubic symphysis and umbilicus. The cervical mass was firm, tender, immobile and which had adhered to the pelvic wall hence was clinically diagnosed as Cervical Cancer Stage 3. A pelvic and abdominal ultrasound was conducted showing bilateral hydronephrosis with left ovarian cyst (10.1 x 8.4 x 8.5cm). Palliative measures were put in place managing her pain, nausea and vomiting, as no further interventions were appropriate.

Learning Points

In a resource poor environment, understanding general palliative processes is vital in easing the patient's end of life care without having to tolerate further harm through extensive investigations. Being familiar with the clinical environment in the Solomon Islands, will enable clinicians to adapt treatment strategies best suitable for their patients with the resources at hand.

STREAM 7: GLOBAL HEALTH & PLANETARY HEALTH C

PR32: C904 – An Aboriginal man suffering a haemorrhagic stroke in remote Western Australia.

Steinberg, Phoebe, 5th year medical student, Bond University, Health Sciences and Medicine.
Professor Jones, Peter, Bond University, Health Sciences and Medicine.
McEwan, Sarah, Rural generalist obstetrician, Headland Health Campus, Port Hedland.

Introduction

The remote Pilbara region of Western Australia is an area of unique natural beauty and Aboriginal history. In contemporary Australia, Aboriginal people suffer disproportionately from non-insulin dependent diabetes and its complications, owing to genetic, environmental and socioeconomic factors.[1] The health care systems of the Gold Coast and the Pilbara differ with remoteness and services available impacting the course of treatment.

Case for discussion

Mr C, a sixty-one-year-old Aboriginal man, presented to the Emergency Department at Hedland Health Campus (HHC) with right sided hemiplegia and aphasia. CT brain findings revealed left basal ganglia haemorrhage and Mr C was transferred urgently to Sir Charles Gairdner hospital in Perth. Mr C's background history included non-insulin dependent diabetes, a Non ST Segment Elevation Myocardial Infarction (NSTEMI), peripheral vascular disease, right midfoot amputation and end stage renal disease. Mr C likely faced great difficulty navigating the health care system due to poor health literacy and as a result had poor adherence to management of his multiple comorbidities.

Health literacy analysis and conclusions

Current healthcare services fail to meet the environmental or individual health literacy needs of Aboriginal residents in the Pilbara. The remote location, low socioeconomic status, age and gender and prevent equitable health care from being achieved. To achieve adequate health literacy widespread change across Government, education, employment and health care must occur. Tailoring care to holistic worldviews, provision of information in native languages, community based care and culturally competent decision maker roles for end of life discussions, would promote positive health outcomes for Aboriginal Australians.[2]

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PR33: C904 – "*DID NOT ATTEND" – PLEASE RESCHEDULE*" Indigenous antenatal care in remote Western Australia, poor foetal growth and why we are leaving the next generation behind.

Woodhouse, Ariel, 5th year medical student, Bond University, Health Sciences and Medicine
Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine.

Introduction

Port Hedland is a remote mining town in the north west of Western Australia, home to many Indigenous Australians.[1] The Hedland Health Campus provides the only birthing service for the region. Intrauterine growth restriction (IUGR) is a disease of placental insufficiency linked to modifiable risk factors stemming from the social determinants of health.[2] Aboriginal babies suffer higher rates of IUGR which predisposes them to poorer perinatal outcomes along with a lifelong susceptibility for chronic diseases, thereby maintaining Australia's healthcare 'gap' for future generations.[3]

Case presentation

Ms G is a 25-year-old Aboriginal woman from the town of Newman (6 hours inland). She is currently 36 weeks pregnant G4P2M1. She has received no antenatal care except an ultrasound confirming the pregnancy at 15 weeks. She presents to the emergency department for an

unrelated complaint, however, has a worryingly small fundal height. There are concerned about a late diagnosis of intrauterine growth restriction and a foetus at risk, requiring birth. Ms G however left emergency and is uncontactable. Her file is labelled "poor antenatal attender". She returns 1 week later and is "escorted" to maternity to be induced.

Problem analysis and learning points

This is a case represents the wide-spread lack of maternity care for Australia's remote and Indigenous women. The provision of culturally safe care is a fundamental requirement for effective engagement and retainment of Indigenous women, especially in emotionally sensitive areas such as pregnancy. For the children of tomorrow, healthcare must start right from the beginning of life.

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PR34: C901 – Climate change: An unexpected factor of the Indigenous Health gap.

Zaman, Tamanna, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

In a world of rapidly evolving health systems, treatments and technologies, not all communities around the world are progressing at the same rate. It is important to acknowledge these differences in order to properly address the disparities in planetary health. The purpose of this project was to discuss these differences, including how the exponential increase in global population has impacted different communities, how major causes of death have changed as diagnoses become more complex and how the relationship between humans and the environment has evolved and impacted on all aspects of health. These are all analysed with respect to Indigenous Australians, one of the most marginalised populations in the country.

Method

The methodology included a literature review to identify how the global environmental changes of 'climate change' and 'desertification and land degradation' are predicted to affect the health and wellbeing of the Australian Indigenous community.

Results

The findings concluded that there is an existing health gap between Indigenous and non-Indigenous populations exacerbated by climate change, and that land degradation and desertification disproportionately affects Indigenous peoples due to their psychological and physical dependence on the land.

Conclusion

These issues must be addressed systemically, potentially by the introduction of official quotas of Indigenous students in educational institutions, and the mandatory employment of Indigenous support services at all levels of education to ultimately encourage professional development in these communities.

PR35: C901 – Impact of climate change on the women of Solomon Islands.

Muralidaran, Krithika, 5th year medical student, Bond University, Health Sciences and Medicine.

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Women in the Solomon Islands are still adversely impacted with regards to reproductive, maternal health services and education. Due to limited access to basic services, lifesaving obstetric care and transport, preventable maternal and perinatal death are amongst the highest. Therefore, having a sustainable development goal of good health and well-being, with a focus on maternal well-being and reproductive health, is relevant to this particular population. The next important sustainable development goal is access to quality education for all individuals. Achieving these two goals can result in a positive impact for women, whilst at the same time reducing the adverse impacts of climate change. Adequate access to family planning

services will not only lessen the complications of high-risk pregnancies, and improve the overall maternal mortality ratio, it will also result in a smaller population size. This in turn can decrease the burden of disease associated with climate change.

Methods

A systems thinking approach was used to identify solutions that will be offered in this presentation.

Conclusion

Overall, it is essential to improve the maternal mortality ratio, eliminating disparities whilst accessing education and improving access to reproductive health services. Achieving these goals through solutions such as improved access to family planning, antenatal education and education services can lead to a reduction in our carbon footprint.

PR36: C901 – The impacts of urbanization on the women of the Solomon Islands.

Sabet, Setareh, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

The Solomon Islands has been significantly impacted by global environmental changes (GECs) which include climate change, stratospheric ozone depletion and urbanization. Although urbanization has allowed for greater access to employment opportunities, education, healthcare and improved infrastructure, uncontrolled rapid urban growth has led to significant burdens on healthcare, housing and other areas of society. This has disproportionately affected vulnerable groups in the Solomon Islands, particularly women, who continue to be economically, socially and culturally disadvantaged. Sustainable Development Goal (SDG) number 5, which aims to address this, was used to explore the impacts of urbanization on women and to create possible solutions to this.

Methods

Systems thinking, which recognizes the dynamics that make up a complex problem and looks for new approaches based on previously undetected needs or patterns, was used to generate possible solutions.

Results

In order to achieve gender equality in urban environments, women's empowerment must be accompanied by simultaneous changes in laws, policies and in sociocultural norms that effectively address these gender disparities.

Conclusion

Urbanization in the Solomon Islands has generally allowed for improvements in gender equality, however, there have also been pitfalls which can be attributed to the lack of gender-sensitive urban planning and lack of legislation and policies protecting women's rights. For urbanization to be sustainable, the gender impacts of urbanization need to be incorporated into the infrastructure, laws and education systems to allow for long-term improvements towards achieving SDG number 5, which will then allow for sustainable development towards the remaining SDGs by 2030.

PR37: C901 – Reducing hunger among children in the Solomon Islands.

Veeranki, Vamsi, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine.

Introduction

Global environmental changes (GECs) are continuing to impact the rates of hunger and malnutrition around the world by threatening food security and quality. The children of the Solomon Islands are one such group experiencing increasing rates of malnutrition, due to fragile food systems impacted by extreme weather events. The purpose of this presentation is to discuss the various methods in which increased food security and quality can be established in the Solomon Islands.

Methods

A designs approach was used to form solutions for this issue, which focused on the specific problems which individuals in the Solomon Islands experienced. These issues included the variable access of food throughout the year, easy access to unhealthy foreign imports and a lack of education on the long-term impacts of unhealthy food choices.

Results

Food security and quality in the Solomon Islands can be improved by increasing crop yield and household tilapia farming. Crop yield can be maximized by utilising conservative agriculture which can potentially increase yield by up to 43% when compared to traditional farming. Tilapia farming provides households a cheap and sustainable source of food and income, increasing access to quality food within 3-4 months of developing a fishpond.

Conclusion

Establishing food security in the Solomon Islands is essential to reduce the rates of hunger and malnutrition among its children. The solutions discussed in this study need to be implemented now as exacerbating climate change threatens to bring more devastating GECs to the Solomon Islands.

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IG6: C901 – Unknown lung pathology in the Solomon Islands.

Lam, Vincent, 5th year medical student, Bond University, Health Sciences and Medicine

Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine

Introduction

This case discusses the diagnostic dilemma of radiological findings in the Solomon Islands, particularly lung pathology found on chest x-ray (CXR) where further investigation such as computed tomography (CT) scans and biopsies are not possible due to the lack of medical resources.

Case Presentation

Mrs X, a 50-year-old lady arrived at Kirakira Hospital (KKH), presenting with a one-year history of pleuritic chest pain, shortness of breath and cough. She was started on empirical benzylpenicillin and doxycycline to treat for suspected pneumonia. CXR was obtained, showing a discrete, 2x3cm coin shaped opacity in the right lung, lower zone that was unable to be further investigated.

Learning Points

Diagnostic tools may not be able to definitively identify lung masses in the Solomon Islands. As a result, it is imperative to be able to fall back on basic skills like thorough physical examination and regular monitoring of clinical signs in order to make the best clinical diagnosis and therefore, the best treatment for the patient.

IG7: C901 – Solomon Islands: The case of Annie and her diabetes.

Jinendradasa, Kavinda, 5th year medical student, Bond University, Health Sciences and Medicine

Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine

Introduction

In March of 2020, four medical students from Bond University had the opportunity for a placement in Kirakira Hospital, a remote community in the Solomon Islands, located far from the usual base of Gold Coast University Hospital. This paper focuses on the case of Annie and explores the challenges to healthcare in remote communities.

Case

Annie is a lady who presented with left unilateral hemiparesis and weakness, on the background of significantly uncontrolled type 2 diabetes mellitus. On examination she had significant left sided weakness and paresis, with sparing on the right side, with associated severe left flank pain and high fevers. Her clinical and provisional diagnosis was a hyperglycaemic crisis on the background of an acquired pyelonephritis. She was resuscitated and commenced on antibiotic therapy for her infection. She progressed well, and eventually made a full recovery.

Health equity analysis

The take home messages about Annie's case, is not only her medical problems, but the socio-economic, cultural and clinical issues which made her disease progression drastically different to what may be expected in a western health care setting.

Conclusion

Annie's position is different to what practitioners in a western setting may be used to. Despite, the barriers, it is humbling to know that, with a standard, health care can approach being equitable for all.

STREAM 8: MEDICAL EDUCATION

PR38: A941 – Micro inequities in medicine.

Ho-Bui, Christine, 5th year medical student, Bond University, Health Sciences and Medicine

Liang, Rhea, Breast Surgeon, Gold Coast University Hospital

Daniel, Rhea, Clinician, John Flynn Hospital

Yang, Verlyn, Registrar Clinician, Gold Coast University Hospital

Schuh, Blair, 4th year medical student, Griffith University

Introduction

The field of studying microinequities in medicine has increased in importance in recent years, with research currently focusing primarily on singular aspects such as sex or race. However, given the current demands in wider society, with demands for equality and social justice, it is more important than ever to examine how microinequities of race, gender, sexuality and disability and the interplay between these can affect junior doctors in the health system.

Methods

This project is currently using a qualitative semi-structured focus group being run by facilitators, with subsequent thematic framework analysis based on transcripts of the focus groups. The groups were all comprised of PGY1-5 junior doctors either currently working or have previously worked in the GCUH system.

Results

As the study is still ongoing, it is difficult to draw concrete conclusions. However, it has become apparent that whilst outright bullying is uncommon in the medical field, microinequities are commonplace, whether this be due to race, gender, sexuality or disability. It was also found that these microinequities were from both fellow colleagues and patients, with junior doctors developing three common responses.

Conclusion

Whilst there are no concrete conclusions as yet, it is apparent that microinequities are still extremely prevalent in the medical community and can be detrimental to the progressive and positive culture required for a safe and equitable work environment. It is also clear that more work in medical education is required for implicit bias recognition to reduce the incidence of microinequities.

PR39: B902 – Combining the old with the new: An interactive electronic workbook for anatomy laboratory sessions.

Ninnes, Louise, 5th year medical student, Bond University, Health Sciences and Medicine.

Stirling, Allan, Associate Professor of Clinical Anatomy, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Anatomy education is historically one of the hallmark courses within the medical curriculum. Even so, there has been a decline in world-wide dedicated anatomy contact hours in recent decades. This has led to student, junior doctor and medical professional concerns regarding inadequate anatomical knowledge upon graduation. However, with the rise of technological resources, 3D representations, virtual reality and online video tutorials, new possibilities for anatomy education now exist. This project aimed to take advantage of technological advancements by creating a resource that combines the existing traditional dissection and prosection laboratory sessions with an interactive workbook.

Method

Completion of Essential Skills in Medical Education (ESME) course, a review of current anatomy education literature, InDesign® tutorials and revisions of the resource by academic supervisors.

Project Outputs

Certificate in ESME Course and a 65-page interactive electronic reproductive workbook. No data has been collected on the effectiveness of this

resource; however, it has been compared to the current literature to ensure it contains relevant and effective teaching methods within it.

Discussion/Conclusions

Data collection is a future direction I would suggest, as well as implementation of interactive electronic workbooks for future laboratory sessions across the range of anatomical subjects. Other future recommendations include creating resources throughout the medical curriculum to assist Phase 2 students feel more confident on clinical rotations and final year students to have adequate anatomy knowledge upon graduation. It is my hope that an integrated anatomy teaching curriculum involving dissections, prosections and interactive technology will produce anatomically educated, competent and confident junior doctors.

PR40: B902 – Foundations of teaching: AMEE's Student ESME online course and development of a prenatal screening resource for clinical students.

Nowzari, Shahrzad, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education Bond University, Health Sciences and Medicine

Introduction

"Doctor" in Latin means "teacher", and undeniably teaching is one of the key activities of any physician regardless of any formal training in teaching. Therefore, exploring effective learning and teaching methods was the primary purpose of this project. The second goal was to apply the acquired knowledge and develop a learning resource beneficial to clinical year students.

Methods

To be involved in teaching, I needed to have the appropriate training in teaching and to gain this skill I enrolled in, Essential Skills in Medical Education (ESME) an online course, which was aimed at those new to teaching and provided a greater understanding of the basic principles.

Results

The ESME course provided a great platform to learn about the basic competencies that are required in; educational planning, effective teacher, and informed assessor/evaluator role. Utilising the knowledge that I gained, I was able to create a PowerPoint resource on the topic of prenatal screening, chromosomal abnormalities, and important genetic conditions aimed at medical students in their clinical years.

Conclusion

This MD professional project provided me with the foundational knowledge and skills that I can utilize in my future role as a teacher and educator. Exposure to teaching principles through the ESME course and the steps I took in creating my educational resource, enabled me to not only learn the art of teaching, but also became a more effective communicator.

PR41: B902 – Foundations of teaching: Resource creation and professional development in medical education.

Wright, Melanie, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Medical education exists on a continuum from the undergraduate medical student through to the specialist undertaking continuing professional development. In addition to ongoing learning, medical education must be intertwined with developing the skill of teaching. In order to become better prepared for my future role as a medical educator, I set out to gain an understanding of the theoretical basis of medical education, acquire foundational teaching skills, understand the different roles of a medical educator and apply these skills in the development of an educational resource.

Methods

Two primary tasks were completed: 1) The AMEE Student Essential Skills in Medical Education (ESME) course. 2) An educational resource for medical students, on the topic of heart murmurs.

Project Outputs

By completing this project, I have gained a foundational understanding of medical education through the completion of the AMEE-ESME Certificate in Medical Education. I have also developed an interactive resource on the topic of heart murmurs for use by medical students in their

directed self-learning. Additionally, I have acquired skills in the use of digital technology, gained a deeper understanding of feedback and reflective processes and grown in confidence in my ability to become an effective medical educator.

Conclusion

This professional project has allowed me to develop both tangible and intangible skills that I will be able to utilise into the future in my role as an effective teacher, whether it be in clinical practice or in a more formalised educational facility.

PB4: B904 – Developing skills in assessment: Creating a peer-written formative examination.

Lall, Manjot, 5th year medical student, Bond University, Health Sciences and Medicine
Maki, Hasan, 5th year medical student, Bond University, Health Sciences and Medicine
McDougall, Lucinda, 5th year medical student, Bond University, Health Sciences and Medicine
Webb, Evelyn, 5th year medical student, Bond University, Health Sciences and Medicine
Zakhem, Sam, 5th year medical student, Bond University, Health Sciences and Medicine
Tepper, Carmel, Academic Assessment Lead, Bond University, Health Sciences and Medicine

Background

This professional project is aimed at developing skills in assessment as part of becoming a more effective medical educator. This project centered around generating a formative, high quality examination for student peers. The aim of this examination was to provide Year 4 medical students with a valuable learning experience, which they could use to guide future study prior to sitting summative examinations.

Methods

We designed 130 multiple choice questions (MCQ) that were individually mapped to key areas of the year four curriculum [1]. As a group we underwent the quality assurance process of reviewing each other's MCQs for content, technical flaws and grammatical mistakes. Additionally, we completed a 12-week Essential Skills in Medical Education (ESME) course which covered key medical education topics.

Results

The examination was undertaken by 93% penultimate year medical students. Our examination had a reliability index (KR-20) score of 0.93 which is considered to be extremely reliable [2]. The average score was 61% with a maximum attained score of 82% with a minimum score of 5%. The cut score was 42.31% as determined by the Cohen Method [3].

Conclusion

The cut score was relatively low when compared with faculty run examinations, however it must be taken into account that this was a formative examination with students not having completed all five disciplines. The post-exam analysis illustrated that the exam was very reliable and highly discriminating. This project, coupled with the ESME course, has provided us a thorough understanding of the principles and practices required to produce a quality examination.

References

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LP9: Comparing interactive polling (Kahoot!) between face-to-face or online health sciences and medical classes.

Phelps, Charlotte, HDR Student, Bond University, Health Sciences and Medicine
Stromberga, Zane, HDR student, Bond University, Health Sciences and Medicine
Moro, Christian, Associate Professor, Bond University, Health Sciences and Medicine

Background

The recent shift from traditional pedagogical delivery mode to online options has challenged tertiary educators to utilise teaching techniques that promote student engagement[1]. Formative assessment using in-class quizzes can provide students with an opportunity to practise their knowledge and skills in a safe environment[2]. The aim of this study was to evaluate health sciences and medical student perceptions of

using the live quizzing platform Kahoot! as a teaching tool in both face-to-face and online remote delivery classes.

Methods

A total of 150 health sciences and medical university students volunteered to participate. The study compared perceptions between a cohort of students using the online quiz tool Kahoot! during biomedical and pre-clinical medical university subjects. In the first cohort, course content was delivered via face-to-face teaching sessions (72 participants) and the second cohort completed the same subjects via online delivery (78 participants). At the session's conclusion, participants answered a Likert scale questionnaire related to their experiences and provided written responses regarding their perceptions towards using the polling platform.

Results

Participants in both the face-to-face and online learning groups rated their learning experience using live quizzing highly. There were no significant differences (Student's two-tailed *t*-test) between experiences from using Kahoot! during an online or face-to-face session. In particular, responses for the face-to-face and online students for the statement "*I enjoyed using Kahoot!"* were 4.71±0.54 and 4.81±0.68 respectively *(P*=0.3).

Conclusion

This study identifies online polling as a teaching tool that is equally effective across both face-to-face and online teaching sessions. This presents online quizzing as a variable instrument for assessment and revision that can be utilised in health sciences and medical courses. As many tertiary institutions are currently split between online, face-to-face or mixed-mode curricula, it is increasingly important to highlight technology that can be rapidly and easily transferred between various modes of delivery.

References

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LP10: Adult development and healthcare leadership behaviours: A systematic review.

Richards-Green, Shannon, HDR student, Bond University, Health Sciences and Medicine

Mickan, Sharon, Professor of Healthcare Innovations, Bond University, Health Sciences and Medicine

Gough, Suzanne, Associate Dean, Learning and Teaching, Bond University, Health Sciences and Medicine

Introduction

Healthcare is becoming increasingly complex. Consequently, there is a need for an expanded leadership capacity to support engagement with ever more complicated leadership challenges. Many healthcare leaders can feel "in over their heads", overwhelmed by the incessant and competing demands of their roles. In such a difficult environment, leaders can no longer rely on meeting their challenges by merely accruing additional skills. What is needed, is a fundamental change and growth in their level of adult development. Surprisingly, there is a dearth of healthcare leadership research focusing on the application of adult developmental and specifically, constructive developmental theory, to healthcare leadership.

Aim

The purpose of this systematic review was to review, in the context of healthcare leadership, the evidence for adult development and leadership behaviours, using constructive development theory. It aimed to answer the following questions: Do healthcare leaders at different levels of adult development, conceptualise their leadership role differently? How, if at all, do healthcare leader's behaviours differ as a function of their level of adult development and what is the implication for the healthcare leader?

Methods

A systematic review will be undertaken to assess qualitative, mixed methods and quantitative research in this area. The databases PsychINFO, CINAHL, Business Source Complete, ERIC, EMBASE, Proquest Health and Medical and PubMed have been searched using key terms

for "constructive development theory", "Subject-object interview" and "healthcare leadership". Studies meeting the inclusion criteria were extracted for analysis.

Implications

An understanding and awareness of the evidence base for the adult developmental growth of health care leaders will underpin programs to support the actual *development* of individuals.

STREAM 9: PAEDIATRICS/OBSTETRICS/GERIATRICS

PR42: A902 – The accuracy between assessors, inter-rater reliability, using digital techniques for measuring the facial phenotype of FASD as an aid for clinical diagnosis.

Dodic, Teodora, 5th year medical student, Bond University, Health Sciences and Medicine

Barot, Dwarkesh, 5th year medical student, Bond University, Health Sciences and Medicine

Till, Haydn, Neuropsychologist, Southport Health Precinct

Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine

Introduction

To investigate the level of agreement between assessors (inter-rater reliability) of clinician and non-clinician background when measuring the Foetal Alcohol Spectrum Disorder (FASD) facial phenotype using two-dimensional photographs and the Foetal Alcohol Syndrome Facial Photographic Analysis Software (FAS FPA Software) in a mixed racial cohort. The purpose of this study was an attempt to reproduce the work of Tsang et al. in which high inter-rater reliability was discovered.[1]

Methods

Clinician assessments and photographs of 147 children (3.08 – 13.08 years) of mixed racial background (Indigenous and non-Indigenous) were obtained from Southport Health Precinct. A retrospective analysis was completed independently by three raters, two medical students and paediatric trainee, who used the photographs and FAS FPA Software to assess palpebral fissure lengths (PFLs), philtrum and lip circularity in each suspected case of FASD. A graded report was produced by the software with ABC-scores and facial ranks which quantified severity of expression. These reports were compared to the clinician reports, the bench-mark assessment, in order to determine inter-rater reliability. SPSS Software and the statistical measure Fleiss' Kappa was used for this.

Results

Digital assessments by two raters achieved moderate (kappa: 0.474, 0.475) and one rater fair (kappa: 0.364) inter-rater reliability when compared with clinician assessment. Overall agreement between the assessors and clinician was fair (kappa: 0.382).

Conclusion

Our hypothesis that Tsang et al. work of high inter-rater reliability would be reproducible and that any individual, with previous clinical background in FASD or not, can be trained to use the FAS FPA Software and accurately assess the facial morphology in mixed racial cohort of potential FASD cases is disproven. However, previous literature has shown promising potential within this software and the use of digital techniques as a reliable assessment method and accurate aid for clinical diagnosis. Scope for future studies should investigate variability of assessments based on different ethnic groups and between each of the key FASD facial morphology features.

Reference

1. Tsang TW, Laing-Aiken Z, Latimer J, et al. Digital assessment of the foetal alcohol syndrome facial phenotype: reliability and agreement study. BMJ Paediatr Open. 2017;1(1):e000137. Published 2017 Sep 11.

PR43: A923 – Audit of the different methods used to screen for intrauterine growth restriction (IUGR) in pregnancy and assessing their effectiveness for future practices.

Naidu, Rubainraj, 5th year medical student, Bond University, Health Science and Medicine.

Abbey, Steve, Director of Obstetrics and Gynaecology, Tweed Hospital, NNSWLHD.

Green, Patricia, Assistant Professor, Clinical Skills, Bond University, Health Science and Medicine

Rathbone, Evelyn, Senior Research Fellow, Bond University, Health Science and Medicine.

Introduction

In Australia, intrauterine growth restriction (IUGR) with no other contributing comorbidities, was

responsible for 5.4% of perinatal deaths amongst singleton babies in 2014. Whilst IUGR is a significant perinatal complication, antenatal screening methods have been placed under scrutiny for its ineffectiveness. This retrospective audit aims to assess the diagnosis of IUGR at Tweed Hospital and the role of risk factor assessment in the screening of IUGR.

Methods

The eMaternity and Obstetrix database at Tweed Hospital was retrospectively audited between January 2017 to December 2019 for 3,318 singleton pregnancies. From this, the IUGR pregnancies were individually compared against clinical guidelines for risk factors, fundal height measurements and ultrasound results. These data were translated and interpreted via Microsoft Excel to assess the effectivity of IUGR screening methods used at Tweed Hospital.

Results

From this audit, 35 low birth weight (LBW) pregnancies were identified, of which 21 (60%) were diagnosed with IUGR antenatally. The main result found from this audit was that whilst fundal height discrepancies had an exceptional screening rate (95%) at Tweed Hospital, the use of a structured risk factor approach could yield benefit, owing to a low screening rate (25%).

Conclusion

Despite the small sample size, this audit provided valuable information regarding the diagnosis of IUGR at Tweed Hospital. It raised questions whether amidst the global pandemic of COVID-19, where face-to-face interactions have been limited, the use of a combined symphysial fundal height and risk assessment approach will be an effective screening tool for IUGR.

References

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PR44: A929 – Gross examination of the placenta, a study of student performance.

Ge, Edward, 5th year medical student, Bond University, Health Sciences and Medicine

Youssef, Alexander, 5th year medical student, Bond University, Health Sciences and Medicine

Wright, Gordon, Professor of Pathology, Bond University and Gold Coast Health

Green, Patricia, Assistant Professor Clinical skills, Bond University, Health Sciences and Medicine

Background

Research has shown that placental examinations are performed poorly by birth attendants and that while structured teaching programs can significantly improve the performance of this skill, few protocols exist to teach inexperienced clinicians. Little research has been conducted on whether university teachings are adequately preparing students for future examinations.

Aim

To create a protocol for placental examination and perform an observational study of students performing placental examinations.

Methods

This observational study of eleven clinical year Bond Medical students, consisted of a literature review of four current protocols for placental examination, which were analysed and their items were correlated with existing data to formulate recommendations. Two tools were then developed – a survey of student experience with placental examinations and a marking scheme developed from the literature review.

Results

The literature review identified several clinically significant findings which informed the protocol, other less researched findings were included as their significance may be clarified in the future. No statistical differences were noted across all sections of the markings scheme for candidates' performances in the observational study.

Conclusion

Our marking criteria and protocol are evidence-based, instructional and easily administered. The protocol and marking criteria developed in the study may be used to assess the knowledge of nursing and medical students in the future. This observational study of placental examination reveals no significant difference in performances across different groups of varying knowledge and placement experience. This study also provides data for comparison with future studies.

PR45: B902 – What to expect when you're not expecting: Contraception and termination of pregnancy educational resources.

Drew, Alexandra, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

During my medical degree, when studying contraception and termination in pregnancy I found there was a gap where resources did not combine the basic principles of anatomy and physiology with clinical reasoning and OSCE practice.

Methods

I created a video and an info graphic to ensure the resources suited both auditory and visual learner. The video was a succinct 16-minute presentation with basic hand drawn graphics and simple to understand explanations recorded on my iPhone. The 25-page info graphic was created on Canva – an online info graphic software program.

Discussion

The ESME course provided me with structure in how I wanted to create my resources. The resources I created is teacher centred learning and student at a distance to make the students have a simple base understanding of the content through the initial video and then make it problem-based information by providing scenarios and MCQs to apply the content.

Conclusion

I met my learning outcomes and gained a range of digital technology skills from creating videos and infographics. I hope the resources will be helpful to the Bond University medical students.

PR46: A923 – An audit of caesarean section for arrest of active phase labour and the use of oxytocin at Tweed Hospital.

Benton, Jessica, 5th year medical student, Bond University, Health Sciences and Medicine
Abbey, Steve, Clinical Director of Obstetrics and Gynaecology, Tweed Heads Hospital.

Background

Oxytocin is widely used to augment arrested active labour when labour does not progress at an adequate rate. A caesarean section is often performed for abnormal labour progression, due to the belief that full dilation and vaginal delivery would otherwise be prolonged and incur adverse health outcomes. This audit aimed at assessing the prevalence and associated complications of caesarean for arrested labour and the use of oxytocin in women delivering at term at the Tweed Hospital.

Methods

An audit was conducted between January 2017 and June 2020, retrospectively examining the eMaternity database. Groups were compared in a non-adjusted analysis using non-parametric Kruskal-Wallis and Pearson's chi-squared, with a significance level of 0.05. A total of 3,908 deliveries were examined, with 358 nulliparous women included.

Results

The rates of nursey admission or APGAR score at 5 minutes did not differ in babies delivered by emergency caesarean for arrest of labour, compared with an elective caesarean. Maternal blood loss during delivery was significantly higher in caesarean deliveries for arrest of labour compared with foetal distress and elective caesareans. The prevalence of caesarean for arrest of labour was found to be 49%, of which 100% received oxytocin.

Conclusion

This audit highlights that oxytocin is a presumed requirement for the diagnosis of arrested labour, with all women with arrested labour given oxytocin before a decision for caesarean. Further study is necessary to examine all caesarean sections for foetal distress, to determine whether arrest of labour was also present and if diagnosed earlier, may have avoided undue newborn distress.

IG8: A916 – Morphometric analysis of bone development in radiographic films of developing juveniles from isolated and non-isolated populations.

Wong, Kennedy, 5th year medical student, Bond University, Health Sciences and Medicine
Wood, Wally, Professor, Bond University, Health Sciences and Medicine
Stirling, Allan, Associate Professor Anatomy, Bond University, Health Sciences and Medicine

Moro, Christian, Associate Professor, Bond University, Health Sciences and Medicine

Introduction

Between 1968-1973, the International Biological Program investigated the influence of the environment on isolated population groups in Papua New Guinea. Previously impossible, modern technological advances have enabled these radiographs to be digitally catalogued and measured. The physical measurements of children were correlated with the data collected. By analysing radiographs and measurements of anthropometrical characteristics of 10-year-old Pari females, this study aims to determine whether correlation exists between height and measurement of metacarpal bones.

Methods

Anthropometrical measurements of hand and wrist radiography were taken of children aged 10 from Pari region. The radiography films were digitalized using ScanMaker 9800XL+ and the dimensions of 2-MTC (metacarpal) and 3-MTC were measured using the program ImageJ v1.48 software. Pearson's correlation coefficient, or an ANOVA was applied to test for significance ($P<0.05$).

Results

Results of 10-year-old Pari female demonstrated a strong relationship between standing and sitting heights with length of 2-MTC and 3-MTC. Significant correlation was found between standing height and length of 2-MTC ($r=0.37$, $P<0.05$). Additionally, correlations were also found between sitting height and 2-MTC length ($r=0.38$, $P<0.05$) and 3-MTC length ($r=0.34$, $P<0.05$).

Conclusion

The second and third metacarpal lengths were consistently positively correlated in this age group. The strong positive correlation allows the metacarpal lengths to be a reliable estimation of standing and sitting heights. Subsequently, prepubertal heights can be most accurately determined from measurements of 2-MTC. This research presents novel clinical considerations that may be used in the developmental assessment of children.

IG9: A918 – Retrospectively calculating and investigating frailty for GCH GEMITH patients: A feasibility study.

Zhang, Wendy, 5th year medical student, Bond University, Health Sciences and Medicine

Wong, Claudia, Geriatrician, Gold Coast University Hospital

Jones, Cindy, Associate Professor Behavioral Science, Bond University, Health Sciences and Medicine

Brandis Susan, Professor of Occupational Therapy, Bond University, Health Sciences and Medicine

Background

Frailty is a state of increased vulnerability associated with ageing populations. The frailty index is one method of quantifying frailty, where characteristics such as number of comorbidities, medications and measures of function are translated into health deficits, and then totalled to give a score. Quantifying frailty is important as it can aid understanding of the determinants of frailty and identify which interventions are most effective for addressing it. However, presently, Gold Coast Hospitals do not routinely quantify frailty for its geriatric patients.

Methods

This project aimed to assess the feasibility of calculating frailty index from routinely collected data including medications, comorbidities and functional impairment, for a small subset of twelve patients from Gold Coast Hospital's geriatric evaluation and management in the home program. We used the Statistical Package for the Social Sciences (SPSS) and a modified version of Bowen's feasibility framework.

Results

Areas of success identified by this study included: the quantitative analysis of frailty index and its relationship with patient characteristics such as age, gender and functional impairment measures. The frailty index was found to be positively correlated with age and negatively correlated with frailty index measurement scores. Areas for improvement included the allocation of more time and personnel for data collection, and advocating for the routine electronic recording of discharge medication summaries in Gold Coast Hospitals.

Conclusion

It is hoped that improvements in the aforementioned areas will allow for this study to be carried out for the entirety of the geriatric population at Gold Coast Hospitals in the near future.

IG10: A920 – Public reporting given the green light by QLD Health: An insight into a private hospital's maternity outcomes.

Lateef, Mushda, 5th year medical student, Bond University, Health Sciences and Medicine
Milne, Jillian, Transition Lead, Health Analytics and Performance Reporting, Wesley Medical Research

Introduction

With the announcement of Queensland (QLD) Health's intention to publicly report on Queensland's public and private hospitals, the Wesley Hospital (TWH), a private hospital in Auchenflower, Brisbane, has made it their mission to review and update their own reportage of key clinical indicators to assess their standing, prior to its release. Stakeholder communiques revealed that consumers were particularly interested in maternity outcomes, hence, the first set of indicators to be benchmarked were the 'National Core Maternity Indicators' (NCMI). From this, those areas of underperformance would be identified and packaged as proposals for TWH to embed into a continuous monitoring quality improvement program.

Methods

Data was collected during the 2018/2019 financial year in a year-to-date format from TWH's electronic maternity records, transferred into Excel and analysed in Tableau using calculated fields. The results were benchmarked against the national standards from the most recently published NCMI summary and formatted into a table with accompanying graphs.

Results

Two indicators were above the national standard; these were, rates of Caesarean Sections (CS) among selected women and small babies (<2750g) among births at or after 40 weeks' gestation.

Conclusion

TWH's relatively high CS rate is in fact consistent with that of the private sector. Nevertheless, efforts should be made by clinicians to further understand the causes of these outcomes by utilising the Robson Classification to inform the need for targeted interventions. Given the discrepancy in cut-offs for low birthweight/small babies, this indicator should be further investigated to determine the most appropriate cut-off for TWH.

LP11: Protection of retinal cells with nitroxide antioxidants in rat laser models of age-rated macular degeneration (AMD).

Mammone, Teresa, PhD Candidate, Clem Jones Centre for Regenerative Medicine, Bond University
Barnett, Nigel, Associate Professor, Clem Jones Centre for Regenerative Medicine, Bond University,
O'Neill, Helen, Professor and Head of Clem Jones Centre for Regenerative Medicine, Bond University

Background

Complex photochemical reactions within the retina initiate the visual pathway that relays light into signals we interpret as images. This activity necessitates high cellular respiration, inducing elevated levels of oxidative, and cellular stress. In a young retina, this stress is mitigated by the retina's own cellular defence strategies. As cells age, this protective capacity is reduced, resulting in an imbalance in cellular homeostasis. Accordingly, oxidative stress is thought to be a major factor in the blinding retinal disease, Age-related Macular Degeneration (AMD). AMD can be categorised as either "wet" or "dry", dependent upon the development of new, leaky blood vessels (wet) or not (dry). The pathology includes the degradation of retinal pigment epithelium (RPE), light-sensing photoreceptors, and Bruch's membrane (BrM). Novel nitroxide-based antioxidant compounds cold attenuate the disease progression by reducing the oxidative burden on RPE cells and provide a neuroprotective approach for retinal repair and regeneration.

Methods

Laser-induced rat models of "wet"-or "dry"-AMD were used. The antioxidant compounds were administered through intraocular or systematic injections. Non-invasive imaging and electro-physiological techniques were used to monitor the progression of retinal degeneration, and the protection afforded by antioxidant administration.

Results

Critical analysis of the models is essential to confirm AMD-like pathology. A laser system used to induce a rupture of the RPE/BrM complex results in critical pathology of leaky blood vessels was found in "wet"-AMD. A second laser system will induce structural and functional retinal changes to generate geographic atrophy-like pathology of "dry"-AMD. Fluorescein angiography and optical coherence tomography will allow quantification of vasculature leakage and retinal layer integrity. Electroretinography will measure retinal function.

Conclusion

This project will determine if novel nitroxide antioxidants can reverse the imbalance of oxidative stresses in the retina and attenuate the progression of AMD. It may provide a basis for more specialised options for the treatment of "wet" or "dry" AMD.

LP12: The BELL (Ballistic Exercise of the Lower Limb) trial: A repeated measures single cohort pragmatic controlled trial of hardstyle kettlebell training to improve grip strength, health-related physical fitness and body composition in sedentary older adults.

Meigh, Neil, HDR Student, Bond University, Institute of Health & Sport, Faculty of Health Sciences and Medicine

Hing, Wayne, Professor Head of Physiotherapy, Bond University; and Sports Performance Research Centre New Zealand, AUT University, Auckland, New Zealand

Keogh, Justin, Associate Professor, Bond Institute of Health & Sport, Bond University

Schram, Ben, Assistant professor, Bond Institute of Health & Sport, Bond University

Background

More than any other age group, adults over 65 require adequate fitness levels to help maintain independence, recover from illness, and reduce their high risk of disease. Kettlebell training claims to improve all measures of health-related physical fitness (HRFF). This trial seeks to establish the effects of kettlebell training on grip strength, HRFF and body composition in sedentary older adults.

Methods

In this repeated measure single cohort study, 32 males and females enrolled to participate in 12-weeks of supervised group kettlebell training compared to 12-weeks of usual activity. Participants attended three 45-minute group training sessions and completed two home training sessions weekly. Attendance and training load were recorded. Change in grip strength was measured by handheld dynamometer. HRFF was measured using standardised clinical fields tests, and body composition with Dual-energy X-ray Absorptiometry (DXA).

Results

29 participants commenced training with 24 completing 12 weeks. A clinically significant increase in grip strength was observed (R=8.0kg (SD 1.4), L=7.0kg (SD 4.8)) with time to complete 5x Floor Transfer reduced by 12.9s (SD 8.2). Six-minute walk distance increased 36m (SD 24) and predicted 1RM kettlebell deadlift increased 12.2kg (SD 8.8). The mean total in-class training load was 98,525kg (SD 43,236) and Relative Skeletal Muscle Index increased 275.6g/m^2 (SD 270). Clinically significant increases in bone mineral density were observed in two subjects with osteoporosis. Attendance rate was >90% and one participant withdrew due to back pain.

Conclusion

Kettlebell training is a safe and effective form of resistance exercise widely enjoyed by sedentary older adults. Kettlebell training could be used a cost-effective prophylactic to promote healthy ageing. Randomised controlled trials comparing the effectiveness of kettlebell training with other forms of community-based group exercise programs are recommended. Further studies should investigate the effects of kettlebell training in the management of bone health among older adults.

LP13: An integrative review of healthcare professionals' knowledge and attitudes towards late life sexuality in older people living with and without dementia.

Chen, Yung-Hui, HDR Student, Bond University, Health Sciences and Medicine

Jones, Cindy, Associate Professor of Behavioural Sciences, Bond University, Health Sciences and Medicine
Bannatyne, Amy, Assistant Professor of Psychology, Bond University, Health Sciences and Medicine

Aim

An integrative review of published literature between 2009 to 2019 from eight electronic databases: CINAHL, PubMed, MEDLINE, Web of Science, Cochrane library, Embase, PsycINFO and Scopus, together with a manual search of reference lists, was conducted to examine (a) healthcare professionals' knowledge and attitudes; and (b) tools used to assess sexuality in older people living with/(out) dementia and those identified as lesbian, gay, bisexual, trans or intersex (LGBTI) individuals.

Methods

Screening of titles, abstracts, and full texts of eligible studies plus quality appraisal (using the Mixed Methods Appraisal Tool) were independently conducted by two reviewers with disagreements resolved via discussion with a third reviewer.

Results

Three themes were identified from the 19 articles included in the review: 1) varying knowledge and attitudes amongst healthcare professionals; 2) needs for professional development opportunities and support from workplace and 3) lack of recent validated tools to assess knowledge and attitudes.

Conclusion

Varying knowledge and attitudes towards sexuality in older people living with/(out) dementia and those identified as LGBTI individuals were found amongst health professionals. Further professional development (i.e. education and training) in the areas of sexuality and ageing are needed to improve health professionals' knowledge and attitudes and to build their skills to manage sexuality concerns. Importantly, there is a need to develop an appropriate assessment tool due to the inadequacy of current assessment tools.

OP6: Consequences of health condition labelling: preliminary qualitative results from a systematic scoping review

Sims, Rebecca, HDR student, Bond University, Institute for Evidence-Based Healthcare.
Michaleff, Zoe, Post-Doctoral Research Fellow, Bond University, Institute for Evidence-Based Healthcare.
Glasziou, Paul, Professor and Director, Institute for Evidence-Based Healthcare, Bond University.
Thomas, Rae, Associate Professor, Bond University, Institute for Evidence-Based Healthcare.

Introduction

Diagnostic labels are frequently used to describe health conditions. For health professionals, diagnostic labels can help classify, treat, and communicate clinical information. To date, the impact and consequences for the individuals receiving diagnostic labels have not been systematically explored. Therefore, this scoping review aimed to describe the range of consequences associated with receiving a diagnostic label.

Methods

This scoping review was conducted in accordance with the Joanna Briggs Methodology for scoping reviews and PRISMA scoping review extension. Searches were conducted in five electronic databases (PubMed, Embase, PsycINFO, Cochrane, CINAHL). Qualitative and quantitative studies were eligible for inclusion if they reported the impact of a diagnostic label for non-cancer health conditions. Only preliminary qualitative results will be discussed.

Thematic analysis was conducted using abstracted themes and relevant, supporting participant quotes from the included studies. Data was mapped to a coding framework devised from responses obtained in social media polling. Data extraction occurred using a staged process involving: *framework development; validation;* and , *saturation.* At each stage, a random sample of one-third of the included qualitative studies were mapped to the study framework. The framework was iteratively developed until thematic saturation, or the non-emergence of new themes, was achieved.

Results

Database searches retrieved 10,179 studies. Following deduplication, 6595 titles were screened, and 305 full texts were reviewed. Eighty qualitative studies, including 4 reviews, were included. To date, thematic analysis has been completed for 36 studies, with the framework expanded to include five primary themes (Psychological Impact; Support; Development; Lifestyle; Service Use) and 20 secondary themes.

Conclusion

Qualitative results highlight the extensive and varied impact of diagnostic labels. Psychological impacts were most frequently reported. The developed framework can be used by clinicians, researchers, and the public to better understand potential impacts of diagnostic labels; however, additional research is required regarding the implications of diagnostic labelling on lifestyle changes.

STREAM 10: PHYSIOTHERAPY/DIETETICS/HUMAN MOVEMENT

LP14: Effectiveness of specific high intensity warm-ups on simulated mixed teams relay triathlon performance.

Palmer, Robert B, HDR Student, Bond University, Health Sciences and Medicine

Eastwood, Annette, Research Fellow, Bond University, Health Sciences and Medicine

D'Auria, Shaun, Senior Performance Scientist, Queensland Academy of Sport

Reaburn, Peter J, Professor and Head of Exercise and Sports Sciences, Bond University, Health Sciences and Medicine

Introduction

A sports-specific warm-up (WU) is important to prepare for the demands of competition (Munro et. al., 2017). Particularly, the intensity and modality of the WU. Due to the increased intensity of the mixed teams relay (MTR), this study aimed to investigate the effect of two high-intensity (HI) WUs on MTR performance.

Methods

Six elite triathletes (3M; 3F) performed one of two 20min WUs prior to a simulated MTR in a counterbalanced crossover design. WU1 (CON) consisted of 10min moderate-intensity (MI; >65%HRmax) running and swimming. WU2 consisted of a 10min intermittent HI swim set and HI intermittent cycling, including 5x 10s 200% peak aerobic power (PP) sprints (Bishop et. al., 2003). Each MTR simulation included a 300m indoor swim, 10.5min variable ergometer cycle and 1.8km outdoor run. One-way repeated measures ANOVA determined statistical differences ($P \leq 0.05$) between WUs and Cohens d. (ES) assessed the magnitudes of effect.

Results

Run time was significantly improved (-14.13 ± 7.7s p=0.046; ES 0.25) following WU2 compared to CON. Overall simulated MTR time significantly improved (-14.48 ± 6.9s p=0.035; ES 0.06) following WU2 compared to CON. Additionally, WU2 produced significantly lower pre-run blood lactate concentrations (-4.0mmol.L ± 0.8, p=0.01, ES=1.67) compared to CON.

Conclusion

WU2 consisted of progressive anerobic work compared to the aerobic nature of CON and may have upregulated specific pathways that may have improved 'lactate tolerance' during the cycle (Baldari et. al., 2007). Therefore, an individualised high-intensity swim and cycle warm may most effective for athlete preparation prior to MTR competition. These results allow coaches to make informed decisions regarding MTR pre-race WUs. Further research is required to determine the possible biochemical mechanisms underlying the present results.

LP15: The influence, barriers and facilitators of anterior cruciate ligament rehabilitation adherence and participation: A scoping review.

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Background

Outcomes following anterior cruciate ligament (ACL) reconstruction are considered poor. There

are many factors that may influence patient outcomes. As such, the purpose of this review was to report on the influence, barriers to and facilitators of rehabilitation adherence and participation after ACL reconstruction, providing information to help clinicians and patients make quality decisions to facilitate successful rehabilitation.

Methods

A systematic search of five electronic databases was undertaken. The search included articles reporting on the influence, barriers to and facilitators of adherence and participation in rehabilitation of patients who have undergone ACL reconstruction.

Results

Full text articles (n = 180) were assessed for eligibility following screening of titles and abstracts (n = 1967), yielding 71 studies for inclusion. Forty-four articles investigated "rehabilitation prescription and participation" and 36 articles investigated "rehabilitation barriers and facilitators". The results indicate that a moderately or minimally supervised rehabilitation program is at least as effective as a fully supervised high-frequency rehabilitation program, although a longer duration of supervised rehabilitation is associated with improvement in a multitude of functional outcomes. A number of psychological factors associated with rehabilitation adherence were also identified. The most commonly investigated concepts were self-motivation, athletic identity and social support. Patients perceived the therapeutic relationship, interaction with family and friends, self-motivation, fear of reinjury, organisation/lack of time, and interpersonal comparison as the most common barriers to and facilitators of rehabilitation.

Conclusion

A longer duration of supervised rehabilitation is associated with an increased chance of meeting functional and return to sport criteria, however, the optimal supervised rehabilitation frequency is yet to be determined. Identification of the barriers to and facilitators of adherence and participation in ACL rehabilitation provides an opportunity for further research to be conducted to address personal, environmental, and treatment-related factors, with the aim to improve rehabilitation outcomes.

OP7: The influence of biological maturation and the athletic development of elite youth Australian footballers.

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Background

Individual variations in growth and maturation are often seen within groups of male youth Australian footballers of the same chronological age group. Accumulating evidence demonstrates that biological maturation is associated with, and presumably has a direct effect upon, the physical fitness attributes of youth Australian footballers. Therefore, greater consideration needs to be given to the individualisation of both evaluation and the development of physical fitness attributes in players of this age range. This study aims to examine the influence of biological maturation on physical fitness attributes possessed by youth Australian footballers aged 12-19 years of age.

Methods

A longitudinal cohort study collected data on 65 male members of the Gold Coast Suns Academy aged 12 to 19 years. Assessments conducted were biological maturation (Khamis-Roach and Mirwald methods) and the physical fitness attributes of muscular strength, muscular power, acceleration, speed and endurance capacity. Descriptive statistics (mean ± SD) were calculated for all physical fitness attributes and presented for both chronological age and level of maturity status. Segmented regression analysis was used to determine time points of increasing or decreasing change of the targeted variable.

Results

Results were still being analysed at the time of writing this abstract.

Conclusion

The results of this research will assist coaches working with male youth athletes to effectively evaluate and design athletic performance programs that develop key physical fitness attributes required during Australian football match play.

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OP8: Integrated transcriptomic and epigenomic analysis of immobilization-induced muscle atrophy.

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Introduction

Disuse atrophy is a secondary complication that often exacerbates the aetiology of injury and chronic disease. Identifying changes in mechanisms that control muscle mass is necessary to characterize atrophy and maintain a healthy functional capacity. This study aimed to use transcriptome- and epigenome-wide analysis to study gene expression and its regulation in human skeletal muscle following short-term limb immobilisation.

Methods

Twenty-one healthy male participants (20-45 years) completed 4 weeks of standardized physical activity prior to a 14-day limb (left leg) immobilisation period with dietary control. Skeletal muscle biopsies were collected from the *m. vastus lateralis* before and after 3 days and 14 days of immobilisation. Skeletal muscle RNA and DNA were isolated and analysed using Illumina RNA sequencing and DNA methylation 850K EPIC BeadChips respectively. Strength testing, DEXA and MRI were also performed pre- and post-immobilisation.

Results

Strength (-16.4%), lean mass (-3.2%) and quadricep cross-sectional area (-8.5%) were all significantly reduced after 14 days. RNA sequencing analysis (17,034 genes) revealed a significant up-regulation of protein ubiquitination pathways after 3 days, which returned to baseline after 14 days. Protein translation pathways were also significantly up-regulated after 3 days, however this appeared to be a transient response as they were significantly down-regulated after 14 days. Other important pathways identified included autophagy, ion transport, rRNA processing, and chromatin remodelling. DNA methylation analysis (18,740 genes) identified more significant pathways after 3 days (181 pathways) compared to 14 days (34 pathways), suggesting methylation cha nges may be an initiating epigenetic factor. These DNA methylation changes were predominantly found in promoter regions and correlated with decreased expression of genes involved in muscle development, calcium ion transport, and gene silencing.

Conclusion

This research is the first extensive transcriptomic and epigenomic study of short-term disuse atrophy in human skeletal muscle and contributes to understanding of the regulatory pathways controlling this process.

OP9: The effect of oral omega-3 polyunsaturated fatty acids supplementation on muscle maintenance and quality of life in patients with cancer: A systematic review and meta-analysis.

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Introduction

Omega-3 polyunsaturated fatty acid (PUFA) supplementation is a promising therapy for cancer-related malnutrition, which affects 20-70% of patients with cancer[1,2]. This systematic review aimed to examine the effects of oral omega-3 PUFA supplementation on muscle maintenance and quality of life in patients with cancer.

Methods

Randomised controlled trials in cancer patients aged >18 years were retrieved from 5 electronic databases; MEDLINE (via PubMed), EMBASE, CENTRAL, CINAHL (via EBSCOhost), and Web of Science, from database inception until 31st of December 2019. Trials supplementing ≥600 mg/d omega-3 PUFA (oral capsules, pure fish oil or oral nutritional supplements) compared with a control intervention for ≥3 weeks were included. Meta-analyses were performed in RevMan to determine the mean differences (MD) in muscle mass and quality of life between omega-3 PUFA and control groups with 95% confidence intervals (CI) and I^2 for heterogeneity.

Results

33 studies in patients with various types of cancers and degrees of malnutrition were included. Meta-analyses showed oral omega-3 PUFA supplements improved physical functioning (MD: 6.33;
95% CI: 0.32, 12.34, p=0.04; I^2=0%). However, there was no significant effect of omega-3 PUFA supplements on muscle mass, global health status and emotional functioning.

Conclusion

This review provides evidence for the benefits of oral omega-3 PUFA supplementation on quality of life but not on muscle maintenance in patients with cancer. Well-designed large-scale randomised controlled trials in homogenous patient cohorts are required to confirm these findings.

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OP10: Food and eating problems as predictors of laparoscopic sleeve gastrectomy outcomes and follow-up adherence: A prospective cohort study.

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Hoult, Jennifer, Accredited Practising Dietitian, Weight Loss Solutions Australia
Maimone, Isabella, Accredited Practising Dietician, Weight Loss Solutions Australia.

Background

Food and eating behavioural problems have been associated with an increased number of adverse events and the inability to sustain weight loss over the long term in bariatric weight loss surgery patients. Multidisciplinary follow-up care (nurse, dietitian, and psychologist) has been shown to maximise the benefits of surgery and increase weight loss. In laparoscopic sleeve gastrectomy (LSG) patients, do the number and type of food and eating problems identified by MDT during usual care predict adherence to multidisciplinary follow-up schedule, complications (nutrient deficiency, surgical and gastrointestinal symptoms), weight change and comorbidity risk factors?

Methods

This observational prospective chart audit consecutively sampled patients who underwent laparoscopic sleeve gastrectomy via a private bariatric medical centre in Queensland, Australia. A food and eating behavioural checklist developed by the multidisciplinary team was inserted into medical notes from March 2019. Patient characteristics, food and eating behavioural problems, and complications (surgical, gastrointestinal, and nutritional) were collected

pre-surgery and 6-months post-surgery. Linear and logistic regression examined relationships using SPSS software.

Results

At 6-months, fifty-three sampled patients (baseline: 39-years [IQR:33-66-years] and 117kg [IQR:103-133kg]) had 54% attendance at the scheduled follow-up appointments and total body weight loss of 23.4±7.2%. The most commonly identified food and eating behavioural problems were meal skipping (100%), large portion sizes (94.3%), and graze eating patterns (64.1%). Pre-surgical meal skipping was associated with less post-operative weight loss at 6-months (21.7+7.6% versus µ27.6+4.7%; p=0.023). Some nutritional and gastrointestinal adverse events were common but mild and were not associated with food and eating behavioural problems.

Conclusion

Problematic food and eating behaviours are common in laparoscopic sleeve gastrectomy patients and future research is necessary to better understand the relationship with post-operative outcomes and the development of a model of care would benefit future bariatric surgery patients.

OP11: Impact of integrating family in rehabilitation and empowering carers for improved nutrition outcomes: The FREER pilot study.

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Background

As short-term patient-centred malnutrition management during rehabilitation admission is not sufficient for long term nutrition care among older adults, the FREER study (Family in Rehabilitation: EmpowERing Carers for improved malnutrition outcomes) aimed to investigate the effect of the patient and family carer-centred model of care in malnourished older adults during and post-rehabilitation. This effect included: on improving nutrition status, physical function, quality of life, service satisfaction, and number of hospital and aged care admissions up to three months post-discharge, compared with usual nutrition care.

Methods

This study was a pragmatic two-arm historically controlled prospective pilot intervention study, conducted in rural New South Wales, Australia. Intervention strategies included the delivery of nutrition counselling during rehabilitation, three months of post-discharge telehealth follow-up, and supportive resources using a novel model of patient- and family carer-centred nutrition care. Outcome measurements included nutrition status (PGSGA), Physical function (Modified Barthel Index), quality of life (AQoL-6D), Carer strain (Zarit Burden score), and Nutrition Service Satisfaction.

Results

30 participants matched by PGSGA rating, age, and sex were recruited for the control and intervention (n=15 per group). Compared with control, the intervention improved nutrition status (p=0.01 and p=0.02 for PGSGA score and

rating, respectively) and resulted in less participants being discharged to hospital or aged care (n=14 [97%], p<0.01). No significant differences were found between groups for physical function, quality of life, and hospital readmission
within three months (p>0.05). Participants (67%) and family carers (60%) reported a good or very good overall satisfaction with the intervention and little to no burden was reported by over 80% for carers.

Conclusion

The FREER intervention had positive impact on nutritional status, rehospitalisation, and institutionalisation during and following rehabilitation. Further investigation of this model among a larger fully powered randomised controlled trial is needed.

OP12: Current use of airway clearance techniques in the management of individuals experiencing an acute exacerbation of bronchiectasis.

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Background

Airway clearance techniques (ACTs) are recommended for people with bronchiectasis both in stable state and during an acute exacerbation. The current use of ACTs by physiotherapists in the management of individuals during an acute exacerbation of bronchiectasis is unclear. The aim of this study was to establish what current physiotherapy practices existed in Australia and New Zealand in the use of ACTs in clinical practice, for people experiencing an acute exacerbation of bronchiectasis.

Methods

A cross sectional online survey was employed, disseminated by the peak professional bodies in both Australia and New Zealand between August 2016 and April 2017. Participants were physiotherapists who had treated adults or children diagnosed with an acute exacerbation of non-cystic fibrosis bronchiectasis in the last 12 months.

Results

The survey was accessed by 130 physiotherapists and 121 of those deemed themselves eligible and consented to participate. Most participants (89%) reported prescribing ACTs for up to 81-100% of individuals during an acute exacerbation of bronchiectasis. The most commonly used ACTs with adults were directed huffing (92%), exercise (89%) and the active cycle of breathing technique (89%). The most commonly used ACTs for paediatric patients were: new born-3 years - percussion (85%) and positioning (77%); 4-10 years - directed huffing (100%) and exercise (85%); 11-18 years - directed huffing (92%) and exercise (77%), active cycle of breathing technique (77%) and positive expiratory pressure therapy (77%). Factors considered most important in influencing the choice of technique were clinical presentation and the presence/absence of contra-indications/ precautions.

Conclusion

This survey demonstrates that airway clearance techniques are routinely used as part of physiotherapy management of people experiencing an acute exacerbation of bronchiectasis, with the most common techniques applied dependent on age.

OP13: Profile of police recruit injuries during academy training.

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Schram, Ben, Assistant Professor, Bond University, Health Sciences and Medicine
Canetti, Elisa, Assistant Professor, Bond University, Health Sciences and Medicine
Orr, Robin, Associate Professor, Bond University, Health Sciences and Medicine

Introduction

Injuries in law enforcement are a significant issue that increase organizational costs and workforce strain while affecting recruits at a significantly higher rate. As training and environments can vary between police academies, each location needs to

be individually profiled to ensure a tailored prevention program can be implemented. The purpose of this research was to profile the injuries sustained by recruits and the activities being performed at the time of injury at a law enforcement academy to help inform injury mitigation strategies.

Methods

A cross-sectional design was implemented using recruit injury data from the Los Angeles Sheriff's Department (LASD). Injury data was provided from the official LASD records including injury date, body site, nature of injury, activity performed during injury, a narrative description of the incident, and ICD-10 codes. Injury incidence rates were calculated per recruit per week, per recruit per year, and per 100 recruits per year. Proportions regarding the nature of injury, site of injury, and activity of injury were calculated.

Results

There was an injury incidence rate of 0.0079 per recruit per week, with 0.41 injuries per recruit per year, and 41.07 injuries per 100 recruits per year. The most common nature of injury was trauma to joints and ligaments (44.15% of injuries), while knee was the most common location of injury (20.90%). Physical training was the most common activity being performed at time of injury (58.50%).

Conclusion

Recruits from this population tend to suffer trauma to joints and ligaments, usually in the knee, and commonly caused by physical training. Injury mitigation strategies should focus on decreasing the number of injuries caused by physical training. One potential method is to optimise the physical training load, to ensure recruits can tolerate the physical stress on their bodies.

OP14: Physical fitness, heart rate variability and occupational performance in specialist police.

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Schram, Ben, Tactical Research Unit, Bond University, Health Sciences and Medicine.

Background

Law enforcement personnel require sufficient physical fitness to perform demanding tasks with limited notice, with specialist police involved in the most high-risk incidents. The necessitates exceptional physical fitness. Heart rate variability (HRV) is a valuable tool for measuring psychological and physiological stress, however, the specialist police population has received little research attention. This study aimed to determine the relationships between the time to complete an occupationally relevant obstacle course and heart rate variability during a firearms training event.

Methods

A cohort of 15 male specialist police officers (5.2±4.4 years' experience) were recorded prospectively with 3-lead seated ECGs for 5 minutes prior to training, after the completing a firearms qualification, and again after a physically and mentally taxing training scenario. Obstacle course completion time was provided retrospectively. HRV was assessed using mean and median RR interval changes and spectral domain analyses were undertaken on baseline and post-stress scenario measures and compared to healthy normative data. Correlations between HRV changes and obstacle course time were analyzed using Spearman's Rho, spectral domain differences with Wilcoxon signed-ranks tests and differences from normative data with Welch's t.

Results

Obstacle course time correlated inversely with the change in mean and median RR interval time between the baseline and post-stress condition (mean RR $p=0.007$, $r=-0.857$, median RR $p=0.028$, $r=-0.762$). Low-frequency and high-frequency power was reduced between conditions ($p=0.004$ exact. The mean baseline RR interval for operators was significantly lower, LF power was significantly greater ($p<0.001$) and HF power similar compared to normative data.

Conclusion

The results indicated that operators were more highly conditioned than the typical person and were not experiencing significantly more psychological stress at rest. More physically fit operators were more resilient to changes in HRV during both physically and mentally taxing

activities. Organizations should encourage high levels of metabolic fitness in personnel.

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STREAM 11: GLOBAL HEALTH & PLANETARY HEALTH D

PR:47 C902 – The impacts of climate change on Indigenous health in Australia.

Baker, Thomas, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Indigenous Australian communities have been identified as being heavily reliant on the land and sea both for survival and nutrition, as well as having strong cultural and spiritual ties to country [(1).] This review of the available literature has attempted to investigate how and if climate change has affected these communities, what steps have been taken to combat this, and what future initiatives are necessary to prevent further damage.

Methods

Traditional search platforms tended to lack specificity to Australian Indigenous peoples or have little data on the topic at all. Google Scholar provided more appropriate resources and was readily used throughout the project. In addition, Government databases as well as global health resources such as the United Nations and World Health Organisation yielded good results.

Results

It was identified that climate change has placed a significant and disproportionately large burden onto the Aboriginal people of Australia, and steps must immediately be taken to remedy this situation [(2).] The literature has identified several methods by which Indigenous communities are trying to reverse the effects of climate change. It specifically noted effectiveness of combining Indigenous and Western land management principals to decide the best course of action regarding climate change [(3)].

Conclusion

This review has identified significant gaps in the literature, and further research into this area is crucial to properly identity the cause of certain issues these communities face in order for funding and solutions to be properly allocated and targeted to achieve the best possible result for future generations.

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PR48:C902 – How climate change will worsen health outcomes for Indigenous Australians.

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Introduction

The earth is undergoing an epidemiological and ecological transition. Climate change is fuelling this shift. CO_2 emissions are higher than at any point in human history, and the hottest 20 years in human existence were in the last 22 years. Indigenous Australians are experiencing poor health outcomes, especially in remote areas. There is a 17-year life expectancy gap, and a disease burden 2.3 times higher than non-Indigenous Australians. Suicide rates are amongst the highest in the world. This project explores how climate change will disproportionately affect the health and wellbeing of Indigenous communities.

Methods

A literature review was undertaken and included government sources, research articles via PubMed and Cochrane reviews, and large studies were prioritized based on a set of criteria. Recent studies were also prioritised (after 2010), although there were some exceptions to this.

Results

Health outcomes in multiple facets are under threat from climate change for Indigenous communities. Destruction of traditional sites will have devastating effects on mental health, suicide rates and sense of community. Industry and infrastructure in remote communities will be destroyed by major weather events, exacerbating poverty, and therefore health outcomes as per the social determinants of health. There will be a reduction in health access as well as health-promoting infrastructure. Air pollution, as well as poor access and poverty, will likely exacerbate chronic disease rates.

PR49: C902 – Indigenous Australian mental health in a changing climate.

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McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Climate change is one of the major global environmental changes and is increasingly accepted as the greatest threat to public health in this century. To address climate change and some of the challenges we face, the United Nations have developed 17 Sustainable Developmental Goals (SDG). However, not all of the SDG's depict all communities around the world equally; in particular, SDG number three – ensure healthy lives and promote wellbeing for all at all ages, i.e. "good health and well-being." Although Australia has a good score of 96.5 for SDG number three, the SDG's advancement fails to reflect the poorer health outcomes amongst Australia's Aboriginal and Torres Strait Islander communities.

Method

Mental health is a significant indicator of SDG number 3. Mental health is especially important because it has been acknowledged as a major concern in the context of climate change. Hence, the purpose of this literature review was to explore the impact of climate change on Aboriginal and Torres Strait Islander mental health. In order to do this, multiple sources including systematic reviews, case studies and academic papers were sourced.

Results

Analysis of the literature showed that the effects of climate change on Indigenous communities in Australia and globally have many similarities – resulting in more negative mental health outcomes.

Moving forward minimizing the negative effects of climate change within our Aboriginal and Torres Strait Islander communities is important. In order to do this, understanding how they respond to climate change and using that as a base for our approach is essential.

PR50: C902 – The Global Environmental Challenges and their impact on remote Indigenous communities in northern Australia.

Sivarajah, Dylan, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

The global environmental changes (GECs) are widespread hazards effecting our planet and health. Research has shown that these changes typically disproportionately effect more vulnerable populations such as Indigenous people living in remote communities, who already suffer from many inherit disadvantages. This presentation identifies the effects of GECs typified by climate change and its impact on the remote Aboriginal and Torres Strait Islander communities in northern Australia. Ultimately providing systematic thinking to assist in the creation of strategies to alleviate the impacts of GECs and support remote Indigenous communities.

Methods

We reviewed and analysed the qualitative literature on the GECs and their effects on the sustainable development goals, applying to them a design thinking process to brainstorm and create innovative solutions.

Results

Research suggested increased vulnerability of Indigenous individuals partially due to some population factors but more predominately due to remoteness of living. The results indicate significant alteration in risks, with altered morbidity and mortality for non-communicable diseases

through heat rise and altered distribution of arboviruses from changes in vector breeding capacity being some of the largest effected health outcomes by the GECs.

Conclusion

Based on the results, significant changes are recommended through design thinking, with key factors of change including mitigation of risks, and the overall involvement of Indigenous individuals in planning, which will improve community adaptation. Further research and planning are still shown to be necessary in targeting and reducing the progress of the global environmental changes with greater global and systemic changes required.

PR51: C903 – The impacts of climate change on the provision of clean water and sanitation to those in information settlements in South Africa.

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McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

South Africa is a country with a rich social and racial history which can be attributed to a number of issues regarding the disparities between various population groups. It has also been significantly impacted by a number of global environmental changes (GECs) which include climate change and urbanization. As a result this has only widened this disparity between communities. Although urbanization has allowed for greater access to employment opportunities, education, healthcare and improved infrastructure, uncontrolled rapid urban growth in South Africa has led to significant burdens on healthcare, housing and the provision of clean water and sanitations. Unfortunately, those that are disproportionately most affected by these (GECs) are those living in informal settlements in South Africa, which are a group of low income, high density living areas on the peripheries of large cities. Living conditions in these areas are characterised by poor sanitation, poverty and ill health. The sustainable development goals (SDGs) are a global partnership between developed and developing countries, advocating for actions to reduce inequality, address climate change and promote good health and wellbeing for all. Of these goals, SDG 6 (Ensure access to, and sustainable management of, water and sanitation for all) continues to be a challenge for South Africa.

Methods

A systems thinking approach was used to address these issues to recognize the numerous facets to a complex problem and looks for new approaches based on previous patterns and solutions. This approach ensures that the population not only has access to these basic services but aims to do this in a sustainable manner.

Results

This presentation introduces ideas such as climate resilient infrastructure and global collaboration. Finally, dry sanitation is suggested as a potential idea to explore as a sustainable option to improve sanitation South Africa's sanitation crisis.

PB5: C905 – Case study – COVID-19 quarantine: The Gujarat, India experience.

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Ekdawi, George, 5th year medical student, Bond University, Health Sciences and Medicine.

Shenoda, John, 5th year medical student, Bond University, Health Sciences and Medicine.

Professor Jones, Peter, Bond University Health Sciences and Medicine.

Dr Maheshwari, Neelam, Bond University Health Sciences and Medicine.

Dr Soni, Jagdish, Clinician, Gandhi Lincoln Hospital, Gujarat, India.

Introduction

A health equity clinical immersion placement in Bihar and Gujarat, India, was undertaken by four final-year medical students from Australia. At the time of departure, the 1st of March 2020, there were 87,137 confirmed cases of COVID-19 globally, 25 cases in Australia and 3 cases in India. The World Health Organisation did not declare the COVID-19 outbreak a global pandemic until the 11th of March. As of the 15th of August 2020, there have been 21,026,758 cases and 755,786 deaths

globally, 22,743 cases in Australia and 2,526,192 cases in India, the third highest in the world.

Case Presentation

Ten days into the health equity immersion, several students developed mild upper respiratory symptoms. Given the background of recent international and domestic travel within India, there was a suspicion the students had COVID-19 and fear of a potential outbreak. The students were tested and had to undergo hospital quarantine in an unprepared rural public hospital. Given the challenge of managing the rapidly developing COVID-19 pandemic, the doctors and officials responsible for the students' isolation made every effort to provide them support. This presentation aims to compare the management of suspected COVID-19 in a rural resource-restricted hospital in India with an urban tertiary hospital in Australia.

Learning Points

The effective implementation of travel restrictions, clear clinical guidelines, isolation and quarantine, adequate testing, hand hygiene, personal protective equipment, and constant communication between health officials, policy makers and the public in both resource-restricted and resource-equipped countries is vital in managing the COVID-19 pandemic.

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STREAM 12: GLOBAL HEALTH & PLANETARY HEALTH E

PR52: C903 – Novel approaches to combat the impact of global environmental change on the health and wellbeing on those in low socioeconomic groups in South Africa.

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McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Human activity continues to drive global environment change, with devastating effects accruing to those least responsible. Those particularly vulnerable to the impacts of climate change, are those who fall into low socioeconomic groups in South Africa [(1)].

Methods

A literature review was undertaken based on a study group of those in low socioeconomic groups in South Africa, and the impacts of global environmental changes within this group were explored. A number of papers were screened and included, with the most significant impacts on this group selected for deeper analysis. Recommendations on how to adapt to and mitigate global environmental change to uphold human rights, promote social justice, and generally improve the health and wellbeing of vulnerable populations were identified, and ultimately created by consulting smaller case studies from similar global communities.

Results

The impact of global environment change unequivocally favours the poor and black communities in South Africa, with the health and wellbeing impacts of air pollution and climate change both creating new and exacerbating new health conditions. Those in lower socio-economic and black minorities already have determinants of ill-health and also face insurmountable obstacles to access health care. Creative and innovative approaches to combating these obstacles are necessary[(2)]. Infrastructure and agricultural practice seem to be the most effective and viable approaches to improving circumstances in South African communities[(3)].

Conclusion

While there are a number of innovative approaches to combating the climate emergency in South Africa, further research is necessary to determine which combination of approaches will be most successful in reducing the inequalities in health and wellbeing secondary to global environmental changes.

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PR53: C903 – Urgent need to reduce $C0_2$ emissions and achieve gender equality in South Africa to mitigate global environmental changes before they further disadvantage the country's women.

Pecoraro, Carla, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Complicated and intertwined global environmental changes (GECs) are forecast to present deleterious effects on human health. The subsequent health effects will disproportionately affect more vulnerable populations, as modulated by socioeconomic determinants. One minority that will be inequitably affected is women in South Africa.

Methods

With reference to the World Health Organisation's Sustainable Development Goals (SDGs) and its indicators, this literature review used a planetary health lens to evaluate evidenced strategies that could mitigate the harms of GECs, adapt to its changes, reduce its impact and identify early warnings.

Results

Global environmental changes have been proven scientifically and it is irrefutable that they are anthropogenically-induced. The GECs have been predicted to pose significant challenges that will unfairly target the globe's most vulnerable populations. The evidence unveiled the extent of GEC harms and the progress and failures of the SDGs to poignantly outline why black women in South Africa will be affected disproportionately more. Creative solutions were analysed and compared to determine the most efficacious ways to mitigate these harms.

Conclusion

The evidence emphasised the importance of committing to the work by the IPCC, WHO and UN to reducing global emissions. The literature supports nuclear power as a sound alternative to fossil fuels in South Africa because of its past experience. Striving for gender and racial equality in South Africa will also lessen the burden on women, an already disempowered minority.

PR54: C903 – Planetary health in low socioeconomic South Africa: How global environmental changes are impacting the achievement of the "Zero Hunger" sustainable development goal.

Tredinnick, Samuel, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Anthropocene driven environmental changes are causing significant stress on the planet. Current literature shows that drought, deforestation, and rapid population growth are accelerating undernutrition rates and food insecurity. Vulnerable communities including low socioeconomic South Africans are experiencing disproportionate impacts of these changes. Unless significant improvements are made, the Sustainable Development Goals (SDGs) set by the United Nations in 2015 will not be achieved by 2030.

Methods

Systems thinking and design thinking were used to innovate potential solutions.

Results

Sustainable agriculture suitable for the harsh weather conditions of South Africa alongside the use of minimal tillage and intercropping could improve soil health and harvesting yields for local farmers. Weather monitoring systems are crucial for rationing food supplies through periods of drought. Increasing food imports at the expense of wealthier regions could honour the 'No One Left Behind' pledge. There is also a need preserve forestry particularly at a local level to promote soil health and riverbank stability. By changing local fuels to solar and wind, logging may be offset to sustainable levels. Additionally, national family planning and contraceptive initiatives are needed to flatten population growth across Africa and reduce the overwhelming demand for limited resources and food.

Conclusion

Current literature suggests that South Africa is not tracking towards successful completion of the Sustainable Development Goals. This is partly due to a historical cycle of endemic poverty, lack of resources, and climate change. Significant efforts are needed to preserve the health of the planet for years to come.

PR55: C904 – The impact of global environmental changes on Indigenous Australian's health and connection to Country.

Darshdeep, Kaur, 5th year medical student, Bond University, Health Sciences and Medicine

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Background

Coastal Indigenous communities have a respectful and symbiotic relationship with ocean life. These communities have strong connections with 'sea country' that form an integral part of their identity. An Indigenous Australian's connection to Country is paramount in their holistic approach to health and well-being, hence the preservation of the marine ecosystem is of utmost importance.

Human activities are leading to changes like ocean warming and pollution. Although measures are being taken to address these changes and their impacts on the survival of humanity, unfortunately, some populations will be disproportionally affected. Coastal Indigenous communities will not only experience the environmental impacts of rising sea levels and loss of marine biodiversity, but they will also experience significant psychological scarring and severe mental illness as a result of 'sickness to country'.

Methods

The Iceberg – a systems thinking model that examines how different parts of a system interact and influence each other – was used to address this complex issue.

Results

The advocation for more Indigenous Protected Areas and Marine Protected Areas need to be created, employment of Indigenous Australians in marine management agencies and the inclusion of educational videos in tourist operations are paramount in the protection of Indigenous Australian health.

Conclusion

In conclusion, urgency is the key underlying driver for the future of not only Indigenous Australians' health but also the planets. However, as Birch (2016) eloquently articulates,

> "*The shift in mindset required to produce meaningful and valuable interactions between Indigenous and non-indigenous people in Australia is perhaps the ultimate challenge to the nation."* (16, pg 4)

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PR56: C904 – The effect of urbanisation upon Indigenous Australians.

Singh, Sohni, 5th year medical student, Bond University, Health Science and Medicine.

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

In modern society, the mark of mankind has led to increased urbanisation of our natural environment, and consequently rapid degradation of land and unsustainable consumption of vital Earthly resources. The Indigenous peoples are dramatically

affected by these changes, and they consider the health of the land as a vital component of their own health. The purpose of this presentation is to explore how urbanisation has affected the land, and subsequently the impact on the physical and socioemotional wellbeing of Indigenous Australians; using Sustainable Development Goal 3: Health and Wellbeing for All.

Methods

Whilst exploring solutions to these problems, I combined Design Thinking and Systems Thinking. Design thinking is a solution orientated way of thinking that involves testing a prototype with real people. Systems thinking involves building solutions via a problem-orientated approach, by understanding the factors and dynamics that make up a complex problem.

Results

Cultural effects of urbanisation include a loss of language, land degradation of traditional land to make way for urban processes and separation from native flora and fauna. Physical health effects have included high smoking rates, decreased health-adjusted life expectancy and increased rates of non-communicable disease. Potential solutions to these problems are increased urban green space and effective use of social media.

Conclusion

It is evident that urbanisation has had a colossal impact on the Indigenous people, including negative effects on their physical and socioemotional wellbeing. Hopefully, urbanisation can transition into an environmentally friendly, culturally inclusive and greener process.

PR57: C904 – A Planetary Health focus in India.

Conradie, Marzel, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

Global environmental changes (GECs) are accelerating and having a detrimental effect on the health and wellbeing of the world's population, particularly effecting the more vulnerable populations.[1] Those living in poor underdeveloped nations, such as the Indian slum communities, are even more vulnerable. India, a lower middle income country accommodates for more than 1.4 billion people.[2] In 2014, 311 million people were living in slums.[2] To address these inequalities, the United Nations developed 17 sustainable developmental goals (SDGs) to be achieved by 2030. This literature review explores the relationship between the GECs of land degradation and climate change in relation to the SDGs of no poverty, zero hunger and clean water and sanitation.

Methods

A literature review was conducted.

Results

Land degradation is reflected by rapid urbanisation, inappropriate agricultural practices and deforestation. This results in increased pressure placed on job opportunities, land security and housing. Other consequences include water contamination and inappropriate waste disposal forming a toxic breeding ground for disease carriers. Climate change is reflected by rising daily temperatures, rising sea levels and increased natural disasters. This results in decreased crop production, loss of jobs, forced migration, injuries, low water quality and water borne infections.

Conclusion

The GEC's are directly and indirectly affecting the hunger and poverty rates as well as water quality. India is one of the fastest growing countries and for this reason, it is crucial for sustainable practises to be implemented. This will ensure the health and wellbeing of future generations to come.

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STREAM 13: GLOBAL HEALTH & PLANETARY HEALTH F

PR58: C904 – A case of advanced metastatic cervical carcinoma in a 35-year-old Aboriginal woman from a remote community in the Pilbara region of Western Australian.

Steinberg, Charlotte, 5th year medical student, Bond University, Health Sciences and Medicine
Valizadeh, Ghazal, 5th year medical student, Bond University, Health Sciences and Medicine
Jones, Peter, Professor of Paediatric Medicine, Bond University, Health Sciences and Medicine

Background

The disparity in health equity between Aboriginal and Torres Strait Islanders and non-Indigenous Australians created the premise for the well-established 'Close the Gap' government campaign. Whilst a multifaceted issue, one of the primary contributors to this health gap is the disproportionately large burden of preventable diseases within the Indigenous population.

Case Summary

This report focuses on a 35-year-old woman from a remote Aboriginal community in the Pilbara region of WA who presented to the Hedland Health Campus with metastatic cervical carcinoma. The patient described six months of ongoing abdominal pain with no prior history of cervical screening tests or HPV vaccination. At the time of diagnosis, there was widespread metastasis resulting in a multitude of complications, and she ultimately passed away within six weeks of presentation. This case brings into focus a number of health inequities that underly undesirable health outcomes experienced by Indigenous Australians in remote communities.

Conclusion

This presentation analyses the issues of widespread socioeconomic disadvantage, poor health literacy and education, limited access and engagement with culturally appropriate healthcare and the increased burden of cancer in a rural, resource restricted setting in Australia. Furthermore, it aims to detail simple measures that can be implemented at a local level to increase awareness and understanding of preventable diseases such as cervical cancer and therefore, allow improved uptake and utilisation of healthcare facilities to achieve better health outcomes.

PR59: C905 – Bhansali trust cataract eye camp in Bodhgaya, India.

Ling, Melissa, 5th year medical student, Bond University, Health Sciences and Medicine
Maheshwari, Neelam, Associate Professor of Pathology, Bond University, Health Sciences and Medicine

Background

In 1984 the Bhansali Trust founded the biggest cataract Eye Camp in India. Biannually, there is a 25 day initiative in which over 51 000 surgeries are performed in one of India's poorest states, Bihar. With a pool of approximately fifty-five ophthalmologists, twenty-five operate on up to 100 patients per day, achieving a minimum of 1,000 cataract surgeries per day. The Bhansali Eye Camp also provides three days of accommodation, with three meals per day, clothing, medication and tuk-tuk transport. This service for patients and an accompanying family member is completely free of cost.

Learning points

This initiative was born to meet the need of curable blindness in a vast population reaching the neediest and isolated people of India. The leading cause of blindness in India is cataract accounting for 62.6% blindness and affecting over nine million people[1] with majority of sufferers unable to access and afford treatment. Poverty, illiteracy and rural living are among the multitude of factors that inhibit accessibility to adequate healthcare for many Indians, generating the need for large-scale strategies like Bhansali Eye Camp to provide a free and accessible service to manage, what in Australia would be a simple condition. This presentation aims to provide details on how such a camp functions and how it manages cataracts.

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PR60: C905 – Bhansali trust 37th eye camp in Bodhgaya: A capstone experience and cultural immersion.

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Officer, Graduate Medical Scheme, Royal Australian Army Medical Corps
Maheshwari, Neelam, Associate Professor of Pathology, Bond University, Health Sciences and Medicine

Introduction

The prevalence of blindness and vision impairment throughout India varies according to region but is most prominent in rural areas.[1] Bhansali Trust is a charitable organisation dedicated to helping marginalised groups in the most impoverished regions of India, through the provision of targeted healthcare, education, and skills-training programs. One such healthcare program is the biannual eye camp held in Bodhgaya, which delivers ophthalmic services to many thousands of people originating from remote villages in the state of Bihar. Two final-year medical students from Bond University were afforded a rare opportunity to visit the Bhansali Trust 37th Eye Camp during 15-18 February 2020, as part of their 'Capstone Experience' and cultural immersion across India.

Case Presentation

Each eye camp achieves extraordinary outcomes by adopting an 'en masse' methodology, whereby approximately 900-1200 patients are treated every day, reminiscent of a 'well-oiled machine'. Most operative cases involve cataract surgery, since cataract remains the predominant cause of blindness. The devoted clinical and logistics staff are the key to making these camps successful. Bhansali Trust eye camps are fully funded (at zero cost to patients), congruent with the overall Bhansali Trust philosophy (replicated in schools and rural villages), whereby a wholistic approach targets many of the social determinants of health and education.[2]

Conclusion

Blindness prevention remains a public health challenge in many developing countries.[3] As India's population continues to rise (with its rapidly growing economy), it's in the nation's best interests to address the immense health burden of blindness in order to alleviate poverty and improve living standards.

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PR61: C901 – Deforestation and rising sea levels in the Solomon Islands: A design-based thinking solution.

Eagles, Alexander, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Introduction

The historical impact of colonialism, war, trade, civil unrest and geopolitics has left the Solomon Island population in a vulnerable position on the world stage to adapt to the impacts of climate change, deforestation and land degradation. Using selected United Nations sustainable development goals, this project aimed to understand how specific global environment changes identified in the literature are impacting on the Solomon Islands community's health and well-being; as well as the complexities surrounding the industries that are both damaging yet provide revenue for the country and offer a solution for the future.

Methods

In June 2020, a computerized search of google scholar and Greenfile EBSCOhost entries from January 1, 1966 to June 1, 2020, was undertaken to identify studies that examined the impact of climate change on the Solomon Islands. Relevant articles were also identified by cross-referencing the citation lists of the articles identified in the electronic search and reviewing the references of global data base websites.

Results

Rising sea levels are a major concern across the Solomon Islands with evidence suggesting sea level rise to be up to three times the global averages. Deforestation of the Solomon Islands is primarily a

result of an over exploited timber industry, impacting livelihood and land degradation.

Conclusion

The financial bedrocks of fisheries, forestry and agriculture are not sustainable in their current states. Focus towards a sustainable more ecological friendly approach of tourism should be sought by a combined government and international investment plan.

PR62: C901 – Global environmental changes, sustainable development goals, the Solomon Islands and design thinking.

Farr, Emily, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Background

The ecological transitions that are occurring are exacerbating the inequalities seen in health outcomes for vulnerable populations. One significant problem arising from the Global Environmental Changes (GEC) for the Solomon Islands is climate change and the subsequent changes to air temperatures and rainfall patterns. These changes are predicted to enhance current difficulties associated with the control of mosquito breeding and thus the distribution and density of disease vectors. As a result, there has been an increased emergence of climate-sensitive mosquito-borne infectious diseases. This is directly related to the United Nation's Sustainable Development Goal 3.3, which focuses on eliminating communicable diseases. Populations like the Solomon Islands are particularly vulnerable to the effects of GECs due to their geographical location, their predominantly ruralised lifestyle and their underlying low socioeconomic status.

Methods

To explore potential solutions to the issue at hand, a design thinking framework was utilised. This method consists of the five following stages – Empathise, Define, Ideate, Prototype and Test.

Results

After using the design thinking and taking into consideration the Solomon Islands' specific vulnerabilities, an evidence-based adaptation strategy was recommended. This was suggested to be delivered in the form of a public health campaign prior to the expansion of the existing Vector Borne Disease Control Programme. It has been shown in similar communities to the Solomon Islands, that an education program prior to the delivery of certain health interventions increases the uptake of control measures and empowers residents to understand, prevent and treat their health issues.

Conclusion

In conclusion this project demonstrated how power of education, particularly when used as a precursor to the implementation of health interventions.

PR63: C901 – Reproductive rights for sustainability in the Solomon Islands.

Ferguson, Nicola, 5th year medical student, Bond University, Health Sciences and Medicine
McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Environmental Challenges and Sustainable Development and

The world is facing an environmental crisis that threatens the health and wellbeing of our human population. Such challenge include overpopulation, resource scarcity, rising sea levels and ecological destruction. The United Nations Sustainable Development Goals (SDG) endorse universal and equitable global development that promotes human health and preserves our natural ecosystems such that future generations are not compromised. Gender Equality, SDG 5, is a fundamental human right and a vital necessity for sustainable development. The Solomon Islands is falling short on this goal, as women and girls continue to be left behind. Lack of women's rights has been strongly linked to the nation's high fertility rates and rapid population growth, which is raising concerns for overpopulation in a fragile nation highly vulnerable to economic and environmental shocks.

Solutions

A proposed solution is a nationwide culturally sensitive Family Planning initiative that seeks to increase awareness of women's reproductive and sexual health rights, educate men and women to challenge marginalising cultural and social norms, increase availability and use of modern

contraception, and empower women to be autonomous in choosing the timing and size of their family. Family Planning initiatives will assist in the overpopulation crisis, confounded by climate change, that is threatening the health and longevity of Solomon Islanders and the natural ecosystems on which they depend.

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PR64: C901 – Sink or swim: Sustainable solutions to WaSH problems in rural Solomon Islands – A systems approach.

Fernando, Hirudini, 5th year medical student, Bond University, Health Sciences and Medicine.

McLean, Michelle, Professor of Medical Education, Bond University, Health Sciences and Medicine

Background

The Solomon Islands is a developing nation heavily burdened by climate-driven challenges despite negligible contributions to global emissions. This review focuses on Sustainable Development Goal 6 *Ensure availability and sustainable management of water and sanitation for all* and its role in the disparity in sustainable development faced by the country's largely rural population, exacerbated by the impacts of climate extremes. The Solomon Islands is lagging behind the rest of the world in access to safe Water, Sanitation and Hygiene (WaSH) services, and rural regions are the most underserviced.

Methods

A systems thinking model is used to identify links between complex WaSH sources and services, climate change and community behaviour in rural Solomon Island communities. This enables identification of leverage points in the system where multi-level change can be instituted to increase climate resilience in these communities.

Discussion

Four key leverage points within the WaSH system are explored. First, deforestation threatens safe water sources with sediment contamination. Avoiding further deforestation is the ideal solution with a stopgap of shifting towards alternate sustainable revenue streams, plantation forests and best-practice logging. Secondly, increased freshwater salinity from sea-level rise can be targeted by protection measures, principally ecosystem-based adaptation. Thirdly, inadequate sanitation jeopardises scarce safe water sources through faecal contamination. A shift towards climate-resilient sanitation types such as raised water-tight pit latrines is called for. Finally, the type of water source has bearing on its climate resilience, especially in the face of increasingly prevalent flood and drought conditions. Reliance on multiple household water sources, with improved collection, storage and maintenance of rainwater ('hardware improvements'), should be matched by education and support measures ('software improvements').

Conclusion

Combined action on these four key leverage points will build strong adaptive capacity of rural Solomon Islands communities to climate-induced challenges by enabling access to more sustainable WaSH services.

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